4 Post Office Square Road
Acton, MA 01720
United States
www.nqa-usa.com

COMPANY NAME: NASA Marshall Space Flight Center
REPORT NUMBER: REO3/AS-S09
AUDIT DATE(s): February 26-March 2, 2007

MAIN SITE ADDRESS	OTHER SITES VISITED
Marshall Space Flight Center, AL 35812	

SCOPE OF REGISTRATION

ISO 9001:2000: All Products and Services Provided by the Marshall Space Flight Center. MSFC Supports the NASA Agency Infrastructure and is a Major Contributor to All Its Scientific and Technical Enterprises.
AS9100: Design, Development, Production, Installation and Servicing of Flight Hardware, Flight Software, and associated Ground Support Equipment Interfacing with Flight Hardware and Fight Software.

STANDARD APPLIED		ACTIVITY CATEGORY			
	ISO 9001		DOC REVIEW		SURVEILLANCE
X	ISO 9001 w AS9100		PRE-ASSESSMENT	X	REASSESSMENT
			ASSESSMENT		SPECIAL VISIT
					TRANSFER OF REGISTRATION

TEAM LEAD or LEAD AUDITOR	OTHER TEAM MEMBERS
Rick Giguere, ANAB # A03158, AIEA	Glenda Howard Louis Reimer

ACTIVITY CONCLUSIONS: (check all that apply)

X	CONFORMING	4	NUMBER of MINORS RAISED
2	NUMBER of OBSERVATIONS or OPPORTUNITIES FOR IMPROVEMENT IDENTIFIED		
X	REGISTRATION RECOMMENDED / CONTINUED REGISTRATION RECOMMENDED		
X	CORRECTIVE ACTION SUBMITTAL REQUIRED	20	WORKING DAYS (from report date)
X	ON-SITE REVIEW OF CORRECTIVE ACTION REQUIRED		
	NONCONFORMING WITH MAJOR NONCONFORMANCES		NUMBER of MAJORS RAISED
	REGISTRATION NOT RECOMMENDED		
	SPECIAL VISIT REQUIRED		DURATION (audit days required)

SPECIAL COMMENTS

Previously identified NC's have been satisfactorily addressed.

LEAD AUDITOR	COMPANY REPRESENTATIVE

- Signature on this report by the assessed Company Representative indicates that this report, and any nonconformities and observations noted within, has been reviewed and accepted.
- Any nonconformities or observations identified are the result of a limited sampling process.
- The Internal Audit system is deemed effective unless noted otherwise within this report.
- This report remains under established confidentiality agreements between NQA and the assessed organization.
- **Prior to the initial assessment, the organization must have performed a full system internal audit, followed by a documented management review. The quality management system must be understood throughout the organization.**

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AUDIT DATE(s): February 26-March 2, 2007

AS9100 ASSESSMENT MATRIX AND PLANNER

AS9100 REQUIREMENTS	LEGEND X = Element Fully Assessed P = Partial Element Assessed E = Exclusions Taken * = Audit each Activity	MANAGEMENT ACTIVITIES	RESOURCE MANAGEMENT	PRODUCT REALIZATION PLANNING	PRODUCT REALIZATION	DESIGN & DEVELOPMENT	REASSESSMENT ACTIVITY
4.2.1	DOCUMENTATION GENERAL	X		P		P	X
4.2.2	QUALITY MANUAL*	X	X	X	X	X	X
4.2.3	CONTROL OF DOCUMENTS	P		P	P	P	X
4.2.4	CONTROL OF RECORDS	X		P	P	P	X
4.3	CONFIGURATION MANAGEMENT	X					X
5.1	MANAGEMENT COMMITMENT	X					X
5.2	CUSTOMER FOCUS	X		P		P	X
5.3	QUALITY POLICY	X					X
5.4.1	QUALITY OBJECTIVES*	X	X	X	X	X	X
5.4.2	QMS PLANNING	X					X
5.5.1	RESPONSIBILITY & AUTHORITY	X					X
5.5.2	MANAGEMENT REPRESENTATIVE	X	P	P	P	P	X
5.5.3	INTERNAL COMMUNICATION	X		P	P	P	X
5.6	MANAGEMENT REVIEW*	X	X	X	X	X	X
6.1	PROVISION OF RESOURCES	P	X				X
6.2.1	HUMAN RESOURCES GENERAL		X				X
6.2.2	COMPETENCE, AWARENESS & TRAINING		X	P		P	X
6.3	INFRASTRUCTURE		X	P	P		X
6.4	WORK ENVIRONMENT		X	P	P		X
7.1	PLANNING PRODUCT REALIZATION			X			X
7.2.1	DETERMINATION OF REQUIREMENTS			X			X
7.2.2	REVIEW OF PRODUCT REQUIREMENTS			X			X
7.2.3	CUSTOMER COMMUNICATION			X			X
7.3	DESIGN & DEVELOPMENT					X	X
7.4.1	PURCHASING PROCESS			X			X
7.4.2	PURCHASING INFORMATION			X			X
7.4.3	VERIFICATION OF PURCHASED PRODUCT			X	P		X
7.5.1	CONTROL OF PROVISION				X		X
7.5.2	VALIDATION OF PROCESSES				X		X
7.5.3	IDENTIFICATION & TRACEABILITY				X		X
7.5.4	CUSTOMER PROPERTY				X		X
7.5.5	PRESERVATION OF PRODUCT				X		X
7.6	MONITORING & MEASUREMENT DEVICES				X		X
8.1	MEASUREMENT, ANALYSIS & IMPROVEMENT	X					X
8.2.1	CUSTOMER SATISFACTION*	X	X	X	X	X	X
8.2.2	INTERNAL AUDIT*	X	X	X	X	X	X
8.2.3	PROCESS MONITORING/MEASUREMENT	X			P		X
8.2.4	PRODUCT MONITORING/MEASUREMENT	P			X		X
8.3	CONTROL NONCONFORMING PRODUCT	P		P	X		X
8.4	ANALYSIS OF DATA*	X	X	X	X	X	X
8.5.1	CONTINUAL IMPROVEMENT*	X	X	X	X	X	X
8.5.2	CORRECTIVE ACTION*	X	X	X	X	X	X
8.5.3	PREVENTIVE ACTION*	X	X	X	X	X	X
	USE OF MARKS*	X	X	X	X	X	X

CURRENT SECTIONS COVERED (SURVEILLANCE NUMBER)							AS-S09
FUTURE SURVEILLANCE PLANNING	NEXT VISITS		S10	S10	S11		
	FOLLOWING YEAR	S12				S12	

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REPORT NUMBER: REO3/AS-S09
AUDIT DATE(s): February 26-March 2, 2007

AUDIT ACTIVITY RECORD

Audit trail reviewed / Personnel interviewed / Documentation reviewed / Departments or Processes Audited
Objective evidence sampled

Reference AS9101C checklist for further details

AREAS OF GOOD PERFORMANCE

*Competency Management Systems is a very comprehensive mechanism.
*Calibration Lab exhibits very good controls
*Lean 6 Sigma Initiative
*SAAM system does a good job of managing projects and coordinating requirements of participants/Partners
See AS9101C checklist for additional information

AREAS FOR IMPROVEMENT

See AS9101C Checklist

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NONCONFORMANCES AND OBSERVATIONS

NUM	REF	ISSUES RAISED	CLASS
1	8.2.2	REQUIREMENT STATED: The organization shall conduct internal audits at planned intervals to determine whether the QMS conforms to… the requirements of **this** international standard. ISSUE RAISED: Though internal audits are conducted on a regular basis, there is inconsistent objective evidence that detail requirements of AS9100 are included.	**NC**
2	7.6	REQUIREMENT STATED: Measurement equipment shall be identified to enable the calibration status to be determined. ISSUE RAISED: One item of equipment, a power supply in use, reportedly not in need of calibration, had an old calibration label dated from 1990. This should be considered an isolated issue. Large sample observed.	**OBS**
3	6.2.2	REQUIREMENT STATED: The organization shall determine the necessary competence for personnel performing work affecting quality and provide training or take other actions. ISSUE RAISED: The organization conducts an annual appraisal of safety, health and environmental training needs, however, there is inconsistent objective evidence that corresponding training is received	**NC**
4	7.3.1	REQUIREMENT STATED: Non Flight and Non Facility design MPR 8060.2 section 3.4.2, 3.5.2, 3.6.2. "Requestor or D/D personnel shall maintain records… ISSUE RAISED: Non-flight design activities and OI 's (Organizational Instructions) do not align with MPR 8060.2. Objective evidence of required records was not available at time of audit from the designated parties identified within the MPR.	**NC**
5	7.3.4	REQUIREMENT STATED: Design and development changes shall be identified and records maintained. ISSUE RAISED: AS 20 OI- 009 does not clearly define actual activities for recording of design changes required in MPR 8823.1 Facilities Design.	**OBS**
6	7.5.1	REQUIREMENT STATED: The organization shall plan and carry out production and service provision under controlled conditions. ISSUE RAISED: In Mechanical Materials Properties Testing, the process review of the Electronic Work Request System shows that there are open work orders dating back up to a year delinquent from the "requested due dates" with no status of work started or updated if work orders have been completed. Further investigation revealed that some of the "open" work orders had been completed; however the test data had not been uploaded on the system. Review of the Organizational Work Instructions EM10-OWI-MET-060 for "Work Tracking, Product Traceability and Control, and Data Control," it was noted that those work instructions do not reflect how the work orders are actually tracked.	NC
		REQUIREMENT STATED: ISSUE RAISED:	

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

SAE AS9101
Technically equivalent to ASD-STAN prEN 9101

REV. C

Issued 2000-09
Revised 2006-07

Superseding AS9101B

Quality Management Systems Assessment

RATIONALE

This document, AS9101C, has been revised to correct a problem with the scoring formula on page 10, and to include an Appendix B that provides guidance information on audit scoring.

The original formula contained '/ 100' on page 10 which was misinterpreted in North America to mean 'divide by 100', whereas in Europe and Asia it was correctly interpreted to mean 'shown as a percentage'. The revised formula provides the correct interpretation, globally.

Appendix B "Quality Management System Audit Scoring" was added to provide guidance on the correct scoring of the AS9101 checksheets. There had been some confusion related to scoring single vs multiple findings, scoring with exclusions to the standard, scoring with multiple instances of the same finding, and multi-site scoring. Guidance on these subjects has been added to this document by adding an Appendix B.

Finally, some minor formatting, typo, and gramatical changes were made to correct issues noted after the previous release. These changes did not affect the content or interpretation of the standard.

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FOREWORD

To assure customer satisfaction, aerospace industry organizations must produce, and continually improve, safe, reliable products that meet or exceed customer and regulatory authority requirements. The globalization of the aerospace industry, and the resulting diversity of regional/national requirements and expectations, has complicated this objective. End-product organizations face the challenge of assuring the quality of, and integrating, product purchased from suppliers throughout the world and at all levels within the supply chain. Aerospace suppliers and processors face the challenge of delivering product to multiple customers having varying quality expectations and requirements.

The aerospace industry has established the International Aerospace Quality Group (IAQG) for the purpose of achieving significant improvements in quality and safety, and reductions in cost, throughout the value stream. This organization includes representatives from aerospace companies in the Americas, Asia/Pacific, and Europe. This international standard has been prepared by the IAQG.

CONTENTS

QUALITY MANAGEMENT SYSTEMS ASSESSMENT

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1. PURPOSE

The purpose of this document is to define the content and the presentation of the Assessment Report for the 9100 standard.

2. QUALITY MANAGEMENT SYSTEM ASSESSMENT REPORT CONTENT

The Assessment Report is made up of:

- Page 6 *(required)*
  General Assessment Information
- Page 7 *(required)*
  Assessment Conclusions
- Page 8 *(optional)*
  General Organization Information
- Page 9 *(required)*
  Assessment Result Summary
- Page 10 *(required)*
  Assessment Scoring
- Page 11 *(required when nonconformities are identified during assessment)*
  Corrective Action Request
- Page 12 *(required when observations/comments are identified during assessment)*
  List of Observations/Comments
- Appendix A
  Quality System Questionnaire

Audit Report No.: REO3/AS-S09	**ASSESSMENT REPORT**	*Assessing company logo*

GENERAL ASSESSMENT INFORMATION

1 Organization & Work Address

Company Name: NASA Marshall Space Flight Center	Tel Number: 256-544-8361 Fax Number: 256-544-8361
Subsidiary of: NASA	e-mail: don.l.miller@msfc.nasa.gov
Organization Identification:	CAGE code: 14981
Assessed Site Address: Marshall Space Flight Center, AL 35812	Assessment Representative & Title: Don Miller -- ISO Rep Management Representative & Title: Robin Henderson -- MR
Main activities: Design, Development, Production, Installation, Servicing	Product Types or Codes: 21, 33, 35.3, K72.2; 376, 737 No. of employees at assessed site: 4,000

2 QMS Registration

[X] ISO Standard / Revision: 9001:2000	[X] Aerospace Standard / Revision: REV B
Expiration Date (if applicable): May 27, 2007	Expiration Date (if applicable): May 27, 2007
Registrar Name: NQA-USA	Registrar Name: NQA-USA

3 Assessment Team

Lead Assessor Name: Rich Giguere [X] Certified Auditor – Type & No. A03158 [ ] Qualified Auditor	Other Assessment Team Members: Glenda Howard AEA A08229 Louise Reimer AEA A09038

4 Assessment Dates: February 26 – March 02, 2007

5 Assessment Scope

[X] Total facility assessed [ ] Initial assessment [ ] Partial facility assessed [X] Re-assessment [ ] Other: [ ] Activity assessed: REO3/AS-S09	[X] All 9100 clauses assessed [ ] Partial 9100 clauses assessed Clauses not assessed:

6 Assessment Disposition	**7 Scoring**
[ ] Conforming [X] Conforming with minor (mi) corrective action [ ] Nonconforming with Major (Ma) corrective action	Scoring result: 93%

8 Assessment Approval

9100 standard version assessed to:

Assessing Company	Date	Lead Assessor Name	Signature
NQA	02 March 2007	Rich Giguere	

Distribution Agreement

This Assessment Report is the property of the Assessed Organization and the Assessing Company. Distribution to other companies or individuals is authorized only after written agreement of the assessed Organization and of the Assessing Company.

To that end, a signature below by an Authorized Representative of the Assessing Company indicates that this report may be copied by the Organization for other customers.

If copied, the report must be disclosed in full including findings and any corrective actions.

Authorized Representative
Assessing Company Name _____ Signature _____ Date 02 March 2007

Audit Report No.: REO3/AS-S09	**ASSESSMENT REPORT**	*Assessing company logo*

ASSESSMENT CONCLUSIONS

General comments about the organization and the quality management system of the assessed organization:

Marshall Space Flight Center has a mature quality management system with strong evidence of management commitment as well as a sense of workforce pride and ownership in the performance of work. There is good focus on continual improvement along with the investment in people to assure a positive outcome.

Strong points:

- Calibration Lab – "Benchmarkable"
- Windchill Electronic System when reviewing documents/records in the Dynamic Modeling and Analysis Loads Branch for CLV
- Excellent support provided for the Auditors
- Professional and cooperative attitudes of all personnel
- Competency management system (CMS) comprehensive mechanism for managing workforce and competency needs and related records
- Utility Control System
- Good emphasis on Lean 6 Sigma initiatives
- SAAM system does a good job of managing projects and coordinating requirements of participants/Partners

Improvement Opportunities:

- Within the receiving inspection process the method to identify the traceability to the IAR number on the internal test report for the raw material could be more consistent in the event of separation from file.
-

Audit Report No.: REO3/AS-S098	**ASSESSMENT REPORT**	*Assessing company logo*

GENERAL ORGANIZATION INFORMATION

1 Legal and Financial Aspects

- ❒ Date of Formation:
- ❒ Legal Status:
- ❒ Capital:
- ❒ Other Data:

	Third Prior Financial Year ( )	Second Prior Financial Year ( )	First Prior Financial Year ( )	Current Financial Year ( )
Sales				
Earnings				
Earnings used for Re-Investment				
Workforce				

2 Turnover breakdown and main Customers

Activities	Main Customers	Sales Percentage
Aviation, Space, and Defense Industry		
Other Activity (be specific)		

3 Clearances or Approvals granted by Authorities

Name of the Authority	Types and References	End of Validity (date)

Audit Report No.: REO3/AS-S09	**ASSESSMENT REPORT**	*Assessing company logo*

ASSESSMENT RESULT SUMMARY

Organization: NASA Marshall Space Flight Center

Clauses*	Result					Observation/Corrective Action Request Number (Ma/mi)
	S	Ma	mi	N/A	N/E	
4 - Quality Management System						
4.1 General requirements	x					
4.2 Documentation requirements	x					
4.3 Configuration management	x					
5 - Management responsibility						
5.1 Management commitment	x					
5.2 Customer focus	x					
5.3 Quality policy	x					
5.4 Planning	x					
5.5 Responsibility, authority and communication	x					
5.6 Management review	x					
6 - Resource management						
6.1 Provision of resources	x					
6.2 Human resources			1			NC mi # 3
6.3 Infrastructure	x					
6.4 Work environment	x					
7 - Product realization						
7.1 Planning of product realization	x					
7.2 Customer-related processes	x					
7.3 Design and development			1			NC mi # 4 OBS # 5
7.4 Purchasing	x					
7.5 Production and service provision			1			NC mi # 6
7.6 Control of monitoring and measuring devices	x					OBS # 2
8 - Measurement, analysis and improvement						
8.1 General	x					
8.2 Monitoring and measurement			1			NC mi # 1
8.3 Control of nonconforming product	x					
8.4 Analysis of data	x					
8.5 Improvement	x					
Assessed Organization Management Rep. name: **Robin Henderson** Signature:						Assessing Company Lead Assessor Name: **Rick Giguere** Signature:
	Results					

* For each clause, indicate with an "X" the results of assessment: "S" for Satisfactory, "Ma" for major corrective action, "mi" for minor, "N/A" for not applicable, or N/E for not evaluated.

Audit Report No.: REO3/AS-S09	**ASSESSMENT SCORING**	*Assessing company logo*

Organization:		**Result**					
	SCORING CHART	Major CAR or minor CAR on Key requirement		Minor CAR on **non** Key requirement		NO CAR	RESULT
		(Col. A)	**(Col. B)**	**(Col. C)**	**(Col. D)**		
		Multiple findings	Single finding	Multiple findings	Single finding		
4	**Quality management system**					**(100)**	
4.1	General requirements	0	10	25	40	50	50
4.2 & 4.3	Documentation requirements & Configuration management	0	10	25	40	50	50
5	**Management responsibility**					**(150)**	
5.1	Management commitment	0	5	15	20	30	30
5.2	Customer focus						
5.3	Quality policy						
5.4	Planning	0	10	20	30	40	40
5.5	Responsibility, authority and communication	0	5	15	20	30	30
5.6	Management review	0	10	25	40	50	50
6	**Resource Management**					**(100)**	
6.1	Provision of resources	0	10	25	40	50	40
6.2	Human resources						
6.3	Infrastructure	0	10	25	40	50	50
6.4	Work environment						
7	**Product realization**					**(450)**	
7.1	Planning of product realization	0	5	15	20	30	30
7.2	Customer-related processes	0	10	30	50	60	60
7.3	Design and development						
7.3.1	Design and development Planning	0	5	15	20	30	5
7.3.2-3-4	Inputs, outputs & review	0	5	15	20	30	30
7.3.5-6	Design and development verification & validation	0	5	15	20	30	30
7.3.7	Control of design and development changes	0	5	15	20	30	30
7.4	Purchasing	0	10	30	50	60	60
7.5	Production and service provision						
7.5.1	Control of production and service provision	0	10	25	40	50	40
7.5.2	Validation of processes for production and service provision	0	10	20	30	40	40
7.5.3	Identification and traceability	0	10	20	30	40	40
7.5.4-5	Customer property & Preservation of product	0	5	15	20	30	30
7.6	Control of monitoring and measuring devices	0	5	10	15	20	20
8	**Measurement, analysis and improvement**					**(200)**	
8.1	General	0	5	10	15	20	20
8.2	Monitoring and measurement						
8.2.1	*Customer satisfaction*	0	5	10	15	20	20
8.2.2	*Internal audit*	0	5	15	20	30	5
8.2.3	*Monitoring and measurement of processes*	0	5	15	20	30	30
8.2.4	*Monitoring and measurement of product*	0	5	15	20	30	30
8.3	Control of nonconforming product	0	5	15	20	30	30
8.4	Analysis of data	0	5	10	15	20	20
8.5	Improvement	0	5	10	15	20	20

The assessed organization agrees on the quality management system scoring and corrective action requests		
Name of Representative:	Signature:	Date: 02 March 07

Total Points Possible	1000
Total Points Achieved	930
Score (pts achieved/pts possible) X 100	93

Audit Report No.: REO3/AS-S09	**CORRECTIVE ACTION REQUEST (CAR)**	*Assessing company logo*

Organization: Site:	Identification CAR No.: Date issued:
Reference Standard:	Referenced Standard Clause concerned:

Criticality Ma / mi	Nonconformance Description

Assessor Name:	Assessor Signature:

Assessed Organization to complete the CAR with root cause analysis, corrective action, and planned completion date of corrective action, and return to the Assessing Company by due date.	Due date:

Action No.:	Root Cause:
Action No.:	Corrective Action:

Planned completion date of corrective action:

Organization Representative Name:	Signature:	Current date:

Verification of the implementation of the completed Corrective Action by the Assessed Organization

Organization Representative Name:	Signature:	Current date:

Verification of the implementation of the completed Corrective Action to be filled out by the Assessing Company

Verification date:	Accepted: Yes ❒ No ❒	Assessor Name:	Assessor Signature:

***S**: Satisfactory - **CAR**: Corrective action request – **Ma**: Major corrective action – **mi**: Minor corrective action*
N /A: Not applicable - **N/E**: Not evaluated - **P:** Product - **M**: Management

Audit Report No.: REO3/AS-S09	**OBSERVATIONS/COMMENTS**	*Assessing company logo*
Organization: NASA Marshall Space Flight Center		
Site: Marshall Space Flight Center	Issued date: 02 March 2007	

Item Number	Section	Observation/Comment
		See findings page – report #REO3/AS-S09

Lead Assessor Name:	Signature:
Rich Giguere	

***S**: Satisfactory - **CAR**: Corrective action request – **Ma**: Major corrective action – **mi**: Minor corrective action*
N /A: Not applicable - **N/E**: Not evaluated - **P:** Product - **M**: Management

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements		S	CAR Number Ma or mi	N/A	N/E
4 QUALITY MANAGEMENT SYSTEM						
4.1 General requirements						
01 Has the organization established, documented, implemented and maintained a quality management system and continually improved its effectiveness in accordance with the requirements of this International Standard?			✓			
02 Does the organization: a) Identify the processes needed for the quality management system and their application throughout the organization? (1) b) determine the sequence and interaction of these processes? (1) c) determine criteria and methods needed to ensure that both the operation and control of these processes are effective? d) ensure the availability of resources and information necessary to support the operation and monitoring of these processes? e) monitor, measure and analyze these processes? f) implement actions necessary to achieve planned results and continual improvement of these processes?			✓ ✓ ✓ ✓ ✓ ✓			
03 Are these processes managed by the organization in accordance with the requirements of this International Standard?			✓			
04 Where an organization chooses to outsource any process that affects product conformity with requirements, does the organization ensure control over such processes?	P		✓			
05 Is the control of such outsourced processes identified within the quality management system?			✓			

Note: Processes needed for the quality management system referred to above should include processes for management activities, provision or resources, product realization and measurement.

Guidance Notes

(1) Main processes formally identified (e.g., list, flow diagram). On line web-based ✓

Objective evidence assessed / Observations / Comments / N/A explanation

Verified process needed, sequence - interaction, methods to ensure effective operation & control, availability of resources, as noted herein in this report. Details noted herein

Outsourcing is handled via Procurement Process (7.4)

*S: Satisfactory - **CAR:** Corrective action request – **Ma:** Major corrective action – **mi:** Minor corrective action*
*N /A: Not applicable - **N/E:** Not evaluated - **P:** Product - **M:** Management*

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E

4.2 Documentation requirements

4.2.1 General

06 Does the quality management system documentation include: a) documented statements of a quality policy and quality objectives? b) a quality manual? c) documented procedures required by this International Standard? d) documents needed by the organization to ensure the effective planning, operation and control of its processes? e) records required by this International Standard (see 4.2.4)? ***f) quality system requirements imposed by the applicable regulatory authorities?***		✓ ✓ ✓ ✓ ✓			
07 Does the organization ensure that personnel have access to quality management system documentation and are aware of relevant procedures?		✓			
08 Do Customer and/or regulatory authority representatives have access to quality management system documentation?		✓			

Note 1: Where the term "documented procedure" appears within this International Standard, this means that the procedure is established, documented, implemented and maintained.
Note 2: The extent of the quality management system documentation can differ from one organization to another due to
a) the size of organization and type of activities,
b) the complexity of processes and their interactions, and
c) the competence of personnel.
Note 3: The documentation can be in any form or type of medium.

4.2.2 Quality manual

09 Has the organization established and maintained a quality manual that includes (1): a) the scope of the quality management system, including details of, and justification for, any exclusions? b) the documented procedures established for the quality management system, or reference to them, and ***when referencing the documented procedures, is the relationship between the requirements of this International Standard and the documented procedures clearly shown?*** (2) c) a description of the interaction between the processes of the quality management system?		✓ ✓ ✓			

Guidance Notes

(1) Quality manual reference and issue. MPD 1230.1 Rev Q 7/18/06
(2) Check the procedure list. procedures all listed on Web site

Objective evidence assessed / Observations / Comments / N/A explanation

Verified Policy + Objectives; Manual + the documentation as noted herein in this report. Verified personnel access to Q&S - all electronic - Good awareness. Verified Cust / Reg Auth access.
Reviewed Quality Manual - Scope, relationship to AS9100 and interaction between process. Also reviewed changes to Manual over triennial period for continued compliance to AS 9100 requirements

S: Satisfactory - CAR: Corrective action request – Ma: Major corrective action – mi: Minor corrective action
N/A: Not applicable - N/E: Not evaluated - P: Product - M: Management

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
4.2 Documentation requirements (continued)					
4.2.3 Control of documents					
10 Are the documents required by the quality management system controlled?	M	✓			
11 Are records controlled according to the requirements given in 4.2.4?		✓			
12 Has a documented procedure been established to define the controls needed to: a) approve documents for adequacy prior to issue? b) review and update as necessary and re-approve documents? c) ensure that changes and the current revision status of documents are identified? d) ensure that relevant versions of applicable documents are available at points of use? e) ensure that documents remain legible and readily identifiable? f) ensure that documents of external origin are identified and their distribution controlled? g) prevent the unintended use of obsolete documents, and to apply suitable identification to them if they are retained for any purpose?		✓ ✓ ✓ ✓			
13 Does the organization coordinate document changes with customers and/or regulatory authorities in accordance with contract or regulatory requirements?		✓			
4.2.4 Control of records					
14 Are records established and maintained to provide evidence of conformity to requirements and of the effective operation of the quality management system?		✓			
15 Do records remain legible, readily identifiable and retrievable? (1)		✓			
16 Has a documented procedure been established to define the controls needed for the identification, storage, protection, retrieval, retention time and disposition of records?		✓			
17 Does the documented procedure define the method for controlling records that are created by and/or retained by suppliers?		✓			
18 Are records available for review by customers and regulatory authorities in accordance with contract or regulatory requirements?		✓			
4.3 Configuration management					
19 Has the organization established, documented and maintained a configuration management process appropriate to the product? Reviewed by other auditor	P				✓

Note: Guidance on configuration management is given in ISO 10007.

Guidance Notes

(1) List records reviewed. Int. Audits, Inspection, Mgmt Rev., Corrective Action, Prev Action,

Objective evidence assessed / Observations / Comments / N/A explanation

Observed documents at various functional areas + Verified Latest Revision - Personal have access to all docs via Marshal Web Site - easy access.. Revision status identified on all docs, Verified that relevant versions are available at point of use. No evidence of need to coordinate doc. changes w/ customer in samples reviewed Reviewed records for legibility, identifiability, + retrievability, storage, protection + retention periods. Verified availability of record for review by customer + regulatory authority

*S: Satisfactory - **CAR**: Corrective action request – **Ma**: Major corrective action – **mi**: Minor corrective action*
*N/A: Not applicable - **N/E**: Not evaluated - **P**: Product - **M**: Management*

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
4.2 Documentation requirements (continued)					
4.2.3 Control of documents					
10 Are the documents required by the quality management system controlled? yes	M	S			
11 Are records controlled according to the requirements given in 4.2.4? yes		S			
12 Has a documented procedure been established to define the controls needed to: a) approve documents for adequacy prior to issue? b) review and update as necessary and re-approve documents? c) ensure that changes and the current revision status of documents are identified? d) ensure that relevant versions of applicable documents are available at points of use? e) ensure that documents remain legible and readily identifiable? f) ensure that documents of external origin are identified and their distribution controlled? g) prevent the unintended use of obsolete documents, and to apply suitable identification to them if they are retained for any purpose?		S S S S S S S			
13 Does the organization coordinate document changes with customers and/or regulatory authorities in accordance with contract or regulatory requirements? yes		S			
4.2.4 Control of records					
14 Are records established and maintained to provide evidence of conformity to requirements and of the effective operation of the quality management system? yes		S			
15 Do records remain legible, readily identifiable and retrievable? (1) yes		S			
16 Has a documented procedure been established to define the controls needed for the identification, storage, protection, retrieval, retention time and disposition of records? yes		S			
17 Does the documented procedure define the method for controlling records that are created by and/or retained by suppliers? yes		S			
18 Are records available for review by customers and regulatory authorities in accordance with contract or regulatory requirements? yes		S			
4.3 Configuration management					
19 Has the organization established, documented and maintained a configuration management process appropriate to the product? yes	P	S			

Note: Guidance on configuration management is given in ISO 10007.

Guidance Notes NPR 1441.1, MPR 1440.2; calibration records
(1) List records reviewed. work orders; Corrective action reports; customer complaints

Objective evidence assessed / Observations / Comments / N/A explanation

Following document were sampled and current revision verified: MPD 1280.1, MPR 1280.7, MPR 8730.5, MPR 6410.1, MPR 4000.1, MPR 8040.2, MWI 4500.1, MWI 4520.1, MWI 3410.1, MPR 3410.1, MWI 6430.1, MPR 8730.2, MPR 1280.2, MPR 1280.4, MWI 8221.1; MWI 1280.4; MWI 1280.2, MWI 4520.1, MPR 4000.1, AS40-ONI-004, - verified meets requirements

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
4.2 Documentation requirements (continued)					
4.2.3 Control of documents					
10 Are the documents required by the quality management system controlled?	M				
11 Are records controlled according to the requirements given in 4.2.4?					
12 Has a documented procedure been established to define the controls needed to: a) approve documents for adequacy prior to issue? b) review and update as necessary and re-approve documents? c) ensure that changes and the current revision status of documents are identified? d) ensure that relevant versions of applicable documents are available at points of use? e) ensure that documents remain legible and readily identifiable? f) ensure that documents of external origin are identified and their distribution controlled? g) prevent the unintended use of obsolete documents, and to apply suitable identification to them if they are retained for any purpose?		S	See previous page		
13 Does the organization coordinate document changes with customers and/or regulatory authorities in accordance with contract or regulatory requirements?					
4.2.4 Control of records					
14 Are records established and maintained to provide evidence of conformity to requirements and of the effective operation of the quality management system?		S			
15 Do records remain legible, readily identifiable and retrievable? (1)		S			
16 Has a documented procedure been established to define the controls needed for the identification, storage, protection, retrieval, retention time and disposition of records?		S			
17 Does the documented procedure define the method for controlling records that are created by and/or retained by suppliers?		S			
18 Are records available for review by customers and regulatory authorities in accordance with contract or regulatory requirements?		S			
4.3 Configuration management					
19 Has the organization established, documented and maintained a configuration management process appropriate to the product?	P	See previous page			

Note: Guidance on configuration management is given in ISO 10007. Jodi CRUBAUGH – INFO MNG

Guidance Notes

(1) List records reviewed. Product Release Firm Approval IDE MG-64-0605 Drawings 90M11866 & 90M11865 Stress Anal Orbital Boom Test Fixtures.

Objective evidence assessed / Observations / Comments / N/A explanation

1) Agreements (Contracts) BAAM 1526, 1221, 1239, 1337
Design Input Form, WIF (Work Initiation Form)
STR Design Branch Support Request
Drawing 90M12034 Purchase Orders –
Terms & Conditions –
Routine Ship- RID's, Supplier Review Report
SCR# 226 (Software Change Request)

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N/A: Not applicable - N/E: Not evaluated - P: Product - M: Management 12/05

Signature Page Software Sign Authorization Rev F & Rev E (7/05

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
5 MANAGEMENT RESPONSIBILITY					
5.1 Management commitment					
01 Has top management provided evidence of its commitment to the development and implementation of the quality management system and continually improving its effectiveness by (1):	M				
a) communicating to the organization the importance of meeting customer as well as statutory and regulatory requirements?		✓			
b) establishing the quality policy?		✓			
c) ensuring that quality objectives are established?		✓			
d) conducting management reviews?		✓			
e) ensuring the availability of resources?		✓			
5.2 Customer focus					
02 Has top management ensured that customer requirements are determined and are met with the aim of enhancing customer satisfaction (see 7.2.1 and 8.2.1)?		✓			
5.3 Quality policy					
03 Has top management ensured that the quality policy: Verified Policy in place					
a) is appropriate to the purpose of the organization?		✓			
b) includes a commitment to comply with requirements and continually improve the effectiveness of the quality management system? employees have card w/ policy		✓			
c) provides a framework for establishing and reviewing quality objectives?		✓			
d) is communicated and understood within the organization? (2) Reviewed @ Mgt Rev		✓			
e) is reviewed for continuing suitability?		✓			
5.4 Planning					
5.4.1 Quality objectives					
04 Has top management ensured that quality objectives, including those needed to meet requirements for product [see 7.1 a)] are established at relevant functions and levels within the organization? (3)		✓			
05 Are the quality objectives measurable and consistent with the quality policy?	M	✓			
5.4.2 Quality management system planning					
06 Has top management ensured that:					
a) the planning of the quality management system is carried out in order to meet the requirements given in 4.1, as well as the quality objectives?		✓			
b) the integrity of the quality management system is maintained when changes to the quality management system are planned and implemented?		✓			

Guidance Notes

(1) Evidence of management commitment. See below
(2) Identify and record method of communication. – Presentations to various organizations on QMS approach + Mgmt Rev.
(3) Review objectives and status of their implementation.

Objective evidence assessed / Observations / Comments / N/A explanation

@ Strong Mgmt involvement and leadership in promoting excellence – Interviewed Mgmt at CenterOps, Mgmt Rep, + Membership of Governing Councils

5.4.1 ① Fly shuttle Safely until retirement related metrics
② Secure Key roles in Space Exp. Dev. related Metrics
③ Org. Mgmt Excellence - related metrics

Verified QMS planning activities Managing through change.

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
5.5 Responsibility, authority and communication					
5.5.1 Responsibility and authority					
07 Has top management ensured that the responsibilities and authorities are defined and communicated within the organization? (1)		✓			
5.5.2 Management representative					
08 Has top management appointed a member of management who, irrespective of other responsibilities, has responsibility and authority that includes:	M				
a) ensuring that processes needed for the quality management system are established, implemented and maintained?		✓			
b) reporting to top management on the performance of the quality management system and any need for improvement?		✓			
c) ensuring the promotion of awareness of customer requirements throughout the organization?		✓			
d) the organizational freedom to resolve matters pertaining to quality?		✓			

Note: The responsibility of the management representative can include liaison with external parties on matters relating to the quality management system.

5.5.3 Internal communication					
09 Has top management ensured that appropriate communication processes are established within the organization and that communication takes place regarding the effectiveness of the quality management system?		✓			

Guidance Notes

(1) Identify and record the method(s) of communication within the organization.

Objective evidence assessed / Observations / Comments / N/A explanation

Verified defined authority & responsibilities throughout organization
Interviewed Management Rep regarding her role in ensuring establishment and maintenance of QMS processes, reporting to top Management via Mgmt Rev. (IMSB, CMC and SPC) on the performance of the QMS, and ensuring awareness of custmr reqts.
5.5.3 (observed communication presentation slides used to communicate to organization. Numerous other methods used.
Verified organizational freedom & willingness to resolve matters pertaining to quality.

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N/A: Not applicable - N/E: Not evaluated - P: Product - M: Management

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
5.6 Management review					
5.6.1 General					
10 Has top management reviewed the organization's quality management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness? (1)		✓			
11 Does this review include assessing opportunities for improvement and the need for changes to the quality management system, including the quality policy and quality objectives?		✓			
12 Are records from management reviews maintained (see 4.2.4)?		✓			
5.6.2 Review input MPR 1280.1 Mgmt Rev.					
13 Does the input to management review include information on (2):	M	✓			
✓a) results of audits? – all audits, including Supplier audits, gov. audits		✓			
✓b) customer feedback?		✓			
✓c) process performance and product conformity?		✓			
✓d) status of preventive and corrective actions?		✓			
✓e) follow-up actions from previous management reviews?		✓			
✓f) changes that could affect the quality management system?		✓			
✓g) recommendations for improvement?		✓			
5.6.3 Review output					
14 Does the output from the management review include any decisions and actions related to (2):	M	✓			
a) improvement of the effectiveness of the quality management system and its processes?		✓			
b) improvement of product related to customer requirements?		✓			
c) resource needs?		✓			

Guidance Notes

(1) Record management review frequency and functions involved (e.g., quality, production). Monthly interval Verified

(2) Verify the availability of input / output data (e.g., statistical data; graphics; summary tables; reports).

Objective evidence assessed / Observations / Comments / N/A explanation

IMSB CMC SPC – Membership of IMSB defined in MPD 1150.1

Agenda - is integrated in all 3 councils –

SPC - 8/07/06 -

Strategic -1/23/07 resources - competency requirements
future work goals/strategies
- 2/5/07 - bi-weekly mtgs - Strategies/Targets

CMC - 2/7/07 - action items
Program schedules/ Milestones
performance measures by program
Smart book, metrics -
Risk Management
Tech. Perf. Metrics

Reviewed Triennial period →

Also reviewed Triennial review of Mgmt Review in conjunction to requirements of AS 9100.

IMSB 11/07/06 goals + objectives changes affecting QMS 12/5/06 and 2/6/07 Monthly perf. metrics

full QMS 5 6 inputs reviewed last audit

C/A's status

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
6. RESOURCE MANAGEMENT					
6.1 Provision of resources					
01 Has the organization determined and provided the resources needed: a) to implement and maintain the quality management system and continually improve its effectiveness? and b) to enhance customer satisfaction by meeting customer requirements?		✓			
6.2 Human resources					
6.2.1 General					
02 Are personnel performing work affecting product quality competent on the basis of appropriate education, training, skills and experience? (1) Interviewed Susan Shotts		✓			
6.2.2 Competence, awareness and training					
03 Does the organization: a) determine the necessary competence for personnel performing work affecting product quality? (2) CMS	P	✓	#3 mi		
b) provide training or take other actions to satisfy these needs?		—			
c) evaluate the effectiveness of the actions taken? Course evaluation		✓			
d) ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives?		✓			
e) maintain appropriate records of education, training, skills and experience (see 4.2.4)? (3)		✓			
6.3 Infrastructure See next page for notes					
04 Does the organization determine, provide and maintain the infrastructure needed to achieve conformity to product requirements? Infrastructure includes, as applicable: a) buildings, workspace and associated utilities? Utility Control System		✓ ✓			
b) process equipment (both hardware and software)?		✓			
c) supporting services (such as transport or communication)?		✓			
6.4 Work environment see next page for notes					
05 Does the organization determine and manage the work environment needed to achieve conformity to product requirements? UCS Monitors entire center - Temp + critical	P	✓			

Note: ***Factors that may affect the conformity of the product include temperature, humidity, lighting, cleanliness, protection from electrostatic discharge, etc.*** Observed USC indicators of Bldg 4473 and 4209

Test Stand 300 Coordinator

Guidance Notes

(1) Review training records and plan (status of the current year and of the previous year).
(2) Give examples of methods used to determine competence (e.g., competence matrix, multi-skill). - CMS System
(3) Review training certificates for the certified personnel and training records (internal and external training courses). SHE Training

Admin Russell & Test Lab Team Coordinator

Objective evidence assessed / Observations / Comments / N/A explanation

Very Good

(1) (2) CMS - Competency Mgmt System - Validation of Competencies (Level 1-4 - defined in system

Workforce Planning - Testing of Competencies Sampled individuals (6) for records of Comp. Eval. (Self rated and Mgmt Validation) 98% Complete

Reviewed records of Training in Satern System - Course evaluations (SLATS evals)

Lessons learned - Sampled SHE (Safety, Health + Environmental) Training Assessment Checklist and evidence of Training

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N/A: Not applicable - N/E: Not evaluated - P: Product - M: Management

Pg 23a
4.3/4.4

4.3

Interviewed Bob Devlin - Center Operations

Infrastructure - Buildings, workspace

Bob Devlin

- Master Plan - infrastructure planning - 20yr Master Plan

AS directives

org. →

Environ. Eng + Occ Health

Logistics Service

facilities

Protective Serv.

FURC (Facilities Utilization Review Committee)

Mandate for reduction of facilities

Charter MC-03-C

Meetings - FURC approved Projects

'09 project

'10 project planning

Shuttle - requirements for facility maintenance of shuttle

Very Good System ~~★★★★~~

UCS - Utility Control System

Bldg 4473 Central Plant Chiller

Bldg 4209

4.4

Critical, urgent, emergency notifications

UCS Daily Log - Monitoring Controlled Environments

① O^2 levels -

observed alarm and resulting evacuation of building w/ security / fire.

② observed records related to response to Fire alarm measured on timeliness of response

(Page 23a)

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
6. RESOURCE MANAGEMENT					
6.1 Provision of resources					
01 Has the organization determined and provided the resources needed: a) to implement and maintain the quality management system and continually improve its effectiveness? and yes b) to enhance customer satisfaction by meeting customer requirements? yes		S			
6.2 Human resources					
6.2.1 General					
02 Are personnel performing work affecting product quality competent on the basis of appropriate education, training, skills and experience? (1) yes		S			
6.2.2 Competence, awareness and training					
03 Does the organization: a) determine the necessary competence for personnel performing work affecting product quality? (2) yes Procedure MWI 3410.1, Rev G	G P	S S			
b) provide training or take other actions to satisfy these needs? yes		S			
c) evaluate the effectiveness of the actions taken? yes		S			
d) ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives? yes		S			
e) maintain appropriate records of education, training, skills and experience (see 4.2.4)? (3) yes		S			
6.3 Infrastructure					
04 Does the organization determine, provide and maintain the infrastructure needed to achieve conformity to product requirements? Infrastructure includes, as applicable: a) buildings, workspace and associated utilities? MSDS b) process equipment (both hardware and software)? c) supporting services (such as transport or communication)? See Permits SK Press					
6.4 Work environment					
05 Does the organization determine and manage the work environment needed to achieve conformity to product requirements? yes	P	S			

Note: Factors that may affect the conformity of the product include temperature, humidity, lighting, cleanliness, protection from electrostatic discharge, etc.

Guidance Notes

(1) Review training records and plan (status of the current year and of the previous year): training database sampled
(2) Give examples of methods used to determine competence (e.g., competence matrix, multi-skill). NASA and MSFC STDS Sampled – NDE training
(3) Review training certificates for the certified personnel and training records (internal and external training courses).

Objective evidence assessed / Observations / Comments / N/A explanation

6.2.2 Interviewed - Technical Expert for QE Work Standards / ASE Eng. Skills Certifications - MSFC site certification - on line database for Special Processes (Safety and Skills for workmanship STDS) ESD, NDT, soldering, coating, testing, surface mount. Sampled system for re-certification due dates.
→ 2007 Workmanship Training Schedule for Electrical Processes Skills

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Reviewed work environment throughout & verified – fire extinguishers, ESD work stations temp/humidity readers & MSDS

• Liquid Penetrant reading level 3
• Magnetic Particle Testing levels 2+3
• Radiographic Testing

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7. PRODUCT REALIZATION					
7.1 Planning of product realization					
01 Does the organization plan and develop the processes needed for product realization (see 4.1)? lgs		S			
02 Is planning of product realization consistent with the requirements of the other processes of the quality management system (see 4.1)? lgs		S			
03 In planning product realization, does the organization determine the following, as appropriate:					
a) quality objectives and requirements for the product? lgs		S			
b) the need to establish processes, documents, and provide resources specific to the product? lgs		S			
c) required verification, validation, monitoring, inspection and test activities specific to the product and the criteria for product acceptance? lgs		S			
d) records needed to provide evidence that the realization processes and resulting product meet requirements (see 4.2.4)? lgs	P	S			
e) ***the identification of resources to support operation and maintenance of the product?*** lgs		S			
04 Is the output of this planning in a form suitable for the organization's method of operations? lgs		S			

Note 1: A document specifying the processes of the quality management system (including the product realization processes) and the resources to be applied to a specific product, project or contract, can be referred to as a quality plan.

Note 2: The organization may also apply the requirements given in 7.3 to the development of product realization processes.

Objective evidence assessed / Observations / Comments / N/A explanation

Interviewed Supervisor/lead in EE Fabrication Lab and reviewed production plan/scheduling.
Verified Quality Objectives - measures flow down to areas
- processes ✓
- sampled work instructions
- work orders listed in 7.5.1 -

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*N /A: Not applicable - **N/E:** Not evaluated - **P:** Product - **M:** Management*

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.2 Customer-related processes					
7.2.1 Determination of requirements related to the product					
05 Does the organization determine:	M	S			
a) requirements specified by the customer, including the requirements for delivery and post-delivery activities?		S			
b) requirements not stated by the customer but necessary for specified or intended use, where known?		S			
c) statutory and regulatory requirements related to the product?		S			
d) any additional requirements determined by the organization?					
7.2.2 Review of requirements related to the product					
06 Does the organization review the requirements related to the product?		S			
07 Is the review conducted prior to the organization's commitment to supply a product to the customer (e.g., submission of tenders, acceptance of contracts or orders, acceptance of changes to contracts or orders) and does it ensure that (1):	P				
a) product requirements are defined?		S			
b) contract or order requirements differing from those previously expressed are resolved?		S			
c) the organization has the ability to meet the defined requirements?		S			
d) risks (e.g., new technology, short delivery time scale) have been evaluated?		S			
08 Are records of the results of the review and actions arising from the review maintained (see 4.2.4)? (2)		S			
09 Where the customer provides no documented statement of requirement, are the customer requirements confirmed by the organization before acceptance?		S			
10 Where product requirements are changed, does the organization ensure that relevant documents are amended and that relevant personnel are made aware of the changed requirements?	P	S			
7.2.3 Customer communication					
11 Does the organization determine and implement effective arrangements for communicating with customers in relation to:					
a) product information?		S			
b) enquiries, contracts or order handling, including amendments?		S			
c) customer feedback, including customer complaints?		S			

Note: In some situations, such as internet sales, a formal review is impractical for each order. Instead the review can cover the relevant product information such as catalogues or advertising material.

Guidance Notes

(1) Check that all affected functions are involved in the review.
(2) Give examples of records reviewed.

DAVID KONNANER - CFO
CHRISTIE LONG - TECH COORD.
SHANDL HUEGELE

Objective evidence assessed / Observations / Comments / N/A explanation

REVIEWED 10 CONTRACTS
ABOUT 100 AGREEMENTS ISSUED ANNUAL BASIS - 10%
1) SAAM #1526, VALIDATION CRYOGENIC VESSELS - 1221 PLUG NOZZLE TESTS, 1239 HYBRID COMPOSITE, 1337 RAINDROP & NYLON TEST. ALL AFFECT FUNCTIONS OF REVIEW
08 - DEFLATE & MANDATORY CLAUSES CLEARLY STATED
2) AMENDMENT, COST ESTIMATE, ROUTER, (FLOW OF APPROVAL)
AGREEMENTS -
EXECUTIVE SUMMARY - JUSTIFICATION WHEN FULL COST RECOVERY NOT

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N/A: Not applicable - N/E: Not evaluated - P: Product - M: Management

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.3 Design and development					
7.3.1 Design and development planning Integrated Design + Analysis Master Schedule					
12 Does the organization plan and control the design and development of product?		S			
13 During the design and development planning, does the organization determine:	M	S			
a) the design and development stages? (1) yes Master Schedule		S			
- ***in respect of organization, task sequence, mandatory steps, significant stages and method of configuration control,***		S			
b) the review, verification and validation that are appropriate to each design and development stage? yes		S			
c) the responsibilities and authorities for design and development? yes					
14 Where appropriate, due to complexity, does the organization give consideration to the following activities:		S			
- ***structuring the design effort into significant elements?***					
- ***for each element, analyzing the tasks and the necessary resources for its design and development. Does this analysis consider an identified responsible person, design content, input data, planning constraints, and performance conditions. Is the input data specific to each clause reviewed to ensure consistency with requirements?*** yes		S			
15 Does the organization manage the interfaces between different groups involved in design and development to ensure effective communication and clear assignment of responsibility? yes		S			
16 Is planning output updated, as appropriate, as the design and development progresses? yes		S			
17 Are the different design and development tasks to be carried out defined according to specified safety or functional objectives of the product in accordance with customer and/or regulatory authority requirements? (2) GSE interfaces	P	S			
7.3.2 Design and development inputs Engine Manufacturability Requirements					
18 Are inputs relating to product requirements determined and are records maintained (see 4.2.4)? (3) Strength/load	M	S			
Do these inputs include:					
a) functional and performance requirements? induced environmental conditions		S			
b) applicable statutory and regulatory requirements?		S			
c) where applicable, information derived from previous similar designs?		S			
d) other requirements essential for design and development? structural		S			
19 Are these inputs reviewed for adequacy? yes - Analysis performed		S			
20 Are requirements completed, unambiguous and not in conflict with each other? yes		S			

Guidance Notes sampled records on Windchill

(1) Give at least an example of a completed design and development plan, or an example of one in progress that identifies the planning of tasks and key events. – ARES I
(2) Give an example. SRR Report C4P72067
(3) Review applicable input data (give examples).

Objective evidence assessed / Observations / Comments / N/A explanation

Interviewed Deputy Branch Chief for Loads Branch - Dynamic Modeling & Analysis for the CLV - Reviewed for CLV - Strength & Load Analysis Requirements listed on spreadsheet – Reg CLV 2007-0206 General Req. Summary, CxP 7000, Design Analysis Working Group, Verified Schedule milestones, Minutes & Action Items from DAWG meeting 2/21/07; Lo 6267 Panel Action Item Tracking Log

Windchill Electronic System for Doc/Records control sampled

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.3 Design and development					
7.3.1 Design and development planning					
12 Does the organization plan and control the design and development of product?					
13 During the design and development planning, does the organization determine: M a) the design and development stages? (1) - ***in respect of organization, task sequence, mandatory steps, significant stages and method of configuration control,*** b) the review, verification and validation that are appropriate to each design and development stage? c) the responsibilities and authorities for design and development?		S S S	MI		
14 Where appropriate, due to complexity, does the organization give consideration to the following activities: - ***structuring the design effort into significant elements?*** - ***for each element, analyzing the tasks and the necessary resources for its design and development. Does this analysis consider an identified responsible person, design content, input data, planning constraints, and performance conditions. Is the input data specific to each clause reviewed to ensure consistency with requirements?***		S S			
15 Does the organization manage the interfaces between different groups involved in design and development to ensure effective communication and clear assignment of responsibility?		S			
16 Is planning output updated, as appropriate, as the design and development progresses?		S			
17 Are the different design and development tasks to be carried out defined according to specified safety or functional objectives of the product in accordance with customer and/or regulatory authority requirements? (2) P		S			
7.3.2 Design and development inputs					
18 Are inputs relating to product requirements determined and are records maintained (see 4.2.4)? (3) M Do these inputs include: a) functional and performance requirements? b) applicable statutory and regulatory requirements? c) where applicable, information derived from previous similar designs? d) other requirements essential for design and development?		S S S S			
19 Are these inputs reviewed for adequacy?		S			
20 Are requirements completed, unambiguous and not in conflict with each other?		S			

7.3.1 PAGE 1 of 2

NCAR 4

USO

Guidance Notes

(1) Give at least an example of a completed design and development plan, or an example of one in progress that identifies the planning of tasks and key events.
(2) Give an example.
(3) Review applicable input data (give examples).

TIM CONN - FACILITIES MNG - Leland DUTNO
KAREN FRANCIS - ADMIN - Kyle FRAME

Objective evidence assessed / Observations / Comments / N/A explanation GEOFF BEACH - MASS

1) - West End 9th Floor - FACILITIES - 1356850
ADD OFFICE 4348 - ~~R9005~~ PW 1083909 RANDY STEPHENS TESTING

2) TEDSI-142 FOR FWR INCLUDES SAFETY FIRE RATING - ELECTRICAL

3) INPUT ELECTRICAL CHANGE, HVAC SIZE NEW WIRING -

~~FSE - CM-604 REV D - TEST BED - SPECIFICATION INPUT~~

SRR Schedule Review 450-CIV-SR-25706

*S: Satisfactory - **CAR**: Corrective action request – **Ma**: Major corrective action – **mi**: Minor corrective action*
*N/A: Not applicable - **N/E**: Not evaluated - **P**: Product - **M**: Management*

26A (A)

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.3 Design and development					
7.3.1 Design and development planning					
12 Does the organization plan and control the design and development of product?					
13 During the design and development planning, does the organization determine:	M				
a) the design and development stages? (1)		S			
- ***in respect of organization, task sequence, mandatory steps, significant stages and method of configuration control,***					
b) the review, verification and validation that are appropriate to each design and development stage?		S			
c) the responsibilities and authorities for design and development?		~~S~~	See Page 1	7	31
14 Where appropriate, due to complexity, does the organization give consideration to the following activities:					
- ***structuring the design effort into significant elements?***		S			
- ***for each element, analyzing the tasks and the necessary resources for its design and development. Does this analysis consider an identified responsible person, design content, input data, planning constraints, and performance conditions. Is the input data specific to each clause reviewed to ensure consistency with requirements?***					
15 Does the organization manage the interfaces between different groups involved in design and development to ensure effective communication and clear assignment of responsibility?		S			
16 Is planning output updated, as appropriate, as the design and development progresses?					
17 Are the different design and development tasks to be carried out defined according to specified safety or functional objectives of the product in accordance with customer and/or regulatory authority requirements? (2)	P	S			
7.3.2 Design and development inputs					
18 Are inputs relating to product requirements determined and are records maintained (see 4.2.4)? (3)	M	S			
Do these inputs include:					
a) functional and performance requirements?		S			
b) applicable statutory and regulatory requirements?		S			
c) where applicable, information derived from previous similar designs?		S			
d) other requirements essential for design and development?		S			
19 Are these inputs reviewed for adequacy?		S			
20 Are requirements completed, unambiguous and not in conflict with each other?		S			

Guidance Notes

(1) Give at least an example of a completed design and development plan, or an example of one in progress that identifies the planning of tasks and key events.
(2) Give an example.
(3) Review applicable input data (give examples).

MARK NORMAN Richland
PAUL TATUM STroud

Objective evidence assessed / Observations / Comments / N/A explanation

~~ORBITAL EXPRESS PROJECT~~ On Reviewed

1) ORBITER BOOM SENSOR SYSTEM TEST FIXTURE DESIGN STARTED MAY 04, OBJECTIVES DESIGN FOR MEASUREMENT OF LOAD CASE DEFINITION / INTERFACE /

2) ACTIVITIES ATP ISSUES - SPECIFICATION OF PRODUCT DEFINED ADNX A LOADLINES, B = STRAIN - THESE LOCATION POINTS ID FIXTURE CONTACT OR MEASURE OBJECTIVES.

S: Satisfactory - CAR: Corrective action request – Ma: Major corrective action – mi: Minor corrective action
N/A: Not applicable - N/E: Not evaluated - P: Product - M: Management

3 LOAD TABLES UPPER 1500 FT LBS WHIFFLETREE LOADS - MEASURE 1690 STRS

2 to B

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.3 Design and development (continued)					
7.3.3 Design and development outputs					
21 Are the outputs of design and development provided in a form that enables verification against the design and development input and approved prior to release?		S			
22 Do the design and development outputs: M a) meet the input requirements for design and development? b) provide appropriate information for purchasing, production and for service provision? c) contain or reference product acceptance criteria? d) specify the characteristics of the product that are essential for its safe and proper use? ***e) identify key characteristics, when applicable, in accordance with design or contract requirements?***		S S S S S			
23 Is all pertinent data required to allow the product to be identified, manufactured, inspected, used and maintained defined by the organization; for example: M ***- drawings, part lists, specifications?*** ***- a listing of those drawings, part lists, and specifications necessary to define the configuration and the design features of the product?*** ***- information on material, processes, type of manufacturing and assembly of the product necessary to ensure the conformity of the product?***		S			
7.3.4 Design and development review					
24 At suitable stages, are systematic reviews of design and development performed in accordance with planned arrangements (see 7.3.1) to (1): M a) evaluate the ability of the results of design and development to meet requirements? b) identify any problems and propose necessary actions? ***c) authorize progression to the next stage?*** ✓		S S S			
25 Do participants in such reviews include representatives of functions concerned with the design and development stage(s) being reviewed?		S			
26 Are records of the results of the reviews and any necessary actions maintained (see 4.2.4)?		S			
7.3.5 Design and development verification					
27 Is verification performed in accordance with planned arrangements (see 7.3.1) to ensure that the design and development outputs have met the design and development input requirements?		S			
28 Are records of the results of the reviews and any necessary actions maintained (see 4.2.4)?		S			

Note: ***Design and/or development verification may include activities such as:***
- ***performing alternative calculations,***
- ***comparing the new design with a similar proven design, if available,***
- ***undertaking tests and demonstrations, and***
- ***reviewing the design stage documents before release.***

JOAN THOLINSEN - PROPULSION DESIGN
SCOTT McCLOONEY DESIGN LEAD -
PAT BENSON - S/W DESIGN

Guidance Notes

(1) Give evidence of reviews.

KEITH CONWELL - S/W LEAD PROJ.
CATHERINE WHITE - S/W REVIEW BOARD

Objective evidence assessed / Observations / Comments / N/A explanation

1) MSFC 4433 1/27/06 JZX Tooling NON-FLIGHT
Review UPPER STAGE, WEEKLY MEETINGS, TASK AGREEMENTS,
TECHNICAL PERFORMANCE MEASURES, VERIFICAT. & VALIDATION, WATCH LIST,
CONTRACT PERFORMANCE REVIEW.
SSM (SUB SYS MANAGEMENT) RESPONSIBLE FOR REVIEW PLANS.

S: *Satisfactory -* ***CAR:*** *Corrective action request –* ***Ma:*** *Major corrective action –* ***mi:*** *Minor corrective action*
N/A: *Not applicable -* ***N/E:*** *Not evaluated -* ***P:*** *Product -* ***M:*** *Management*

ID#64 Reviewed (USO) UPPER STAGE MANAGEMENT PLAN - USO-CIV-MA-25000 REF NOV-2006
BDMS SEPARATION TIMELINE - SPECIS

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.3 Design and development (continued)					
7.3.3 Design and development outputs					
21 Are the outputs of design and development provided in a form that enables verification against the design and development input and approved prior to release?		S			
22 Do the design and development outputs: a) meet the input requirements for design and development? b) provide appropriate information for purchasing, production and for service provision? c) contain or reference product acceptance criteria? d) specify the characteristics of the product that are essential for its safe and proper use? ***e) identify key characteristics, when applicable, in accordance with design or contract requirements?***	M	S S S S S			
23 ***Is all pertinent data required to allow the product to be identified, manufactured, inspected, used and maintained defined by the organization; for example:*** ***- drawings, part lists, specifications?*** ***- a listing of those drawings, part lists, and specifications necessary to define the configuration and the design features of the product?*** ***- information on material, processes, type of manufacturing and assembly of the product necessary to ensure the conformity of the product?***	M	S			
7.3.4 Design and development review					
24 At suitable stages, are systematic reviews of design and development performed in accordance with planned arrangements (see 7.3.1) to (1): a) evaluate the ability of the results of design and development to meet requirements? b) identify any problems and propose necessary actions? ***c) authorize progression to the next stage?***	M	S See other 27A			
25 Do participants in such reviews include representatives of functions concerned with the design and development stage(s) being reviewed?		S			
26 Are records of the results of the reviews and any necessary actions maintained (see 4.2.4)?		S			
7.3.5 Design and development verification					
27 Is verification performed in accordance with planned arrangements (see 7.3.1) to ensure that the design and development outputs have met the design and development input requirements?		S			
28 Are records of the results of the reviews and any necessary actions maintained (see 4.2.4)?		S			

Note: ***Design and/or development verification may include activities such as:***
- ***performing alternative calculations,***
- ***comparing the new design with a similar proven design, if available,***
- ***undertaking tests and demonstrations, and***
- ***reviewing the design stage documents before release.***

Guidance Notes

(1) Give evidence of reviews.

Objective evidence assessed / Observations / Comments / N/A explanation

VERIFICATION ORBITAL EXPRESS SOP - EI32-6E-STPR 5/2/05
TESTS INCLUDE YAW, PITCH - RANGE REPORTING
ORBITAL BOOM SENSOR TEST FIXTURE - VERIFICATION
STRUCTURAL ANALYSIS - PRINT 90 MILES - REVIEWED
SIGNED ON RESOLUTION + TEAM LEAD

S: Satisfactory - CAR: Corrective action request – Ma: Major corrective action – mi: Minor corrective action
N /A: Not applicable - N/E: Not evaluated - P: Product - M: Management

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.3 Design and development (continued)					
7.3.6 Design and development validation					
29 Is design and development validation performed in accordance with planned arrangements (see 7.3.1) to ensure that the resulting product is capable of meeting the requirements for the specified application or intended use, where known?	P	S			
30 Wherever practicable, is validation completed prior to the delivery or implementation of the product?		S			
31 Are records of the results of validation and any necessary actions maintained (see 4.2.4)?		S			

Notes:
- ***Design and/or development validation follows successful design and/or development verification.***
- ***Validation is normally performed under operating conditions.***
- ***Validation is normally performed on the final product, but may be necessary in the earlier stages prior to product completion.***
- ***Multiple validations may be performed if there are different intended uses.***

7.3.6.1 Documentation of design and/or development verification and validation					
32 At the completion of design and/or development, does the organization ensure that reports, calculations, test results, etc., demonstrate that the product definition meets the specification requirements for all identified operational conditions?	M	S			
7.3.6.2 Design and/or development verification and validation testing					
33 Where tests are necessary for verification and validation, are these tests planned, controlled, reviewed, and documented to ensure and prove the following: (1)	P	S			
a) test plans or specifications identify the product being tested and the resources being used, define test objectives and conditions, parameters to be recorded, and relevant acceptance criteria?		S			
b) test procedures describe the method of operation, the performance of the test, and the recording of the results?		S			
c) the correct configuration standard of the product is submitted for the test?		S			
d) the requirements of the test plan and the test procedures are observed?		S			
e) the acceptance criteria are met?		S			

Guidance Notes AVGS Flight Software

(1) Give an example of any reports, plans, or procedures reviewed.

Objective evidence assessed / Observations / Comments / N/A explanation

ORBITAL EXPRESS EXTENSIVE VERIFICATION ~~VALIDATE~~ PERFORMED BY NRASA, VALIDATION PERFORMED CUSTOMER BOEING - PROJECT SUBJECT TO ACCEPTANCE REVIEW - 1/11/06 AVGS - FINAL ACCEPT REVISION F.

1) PLAN TEST POWER ON - 4 TEST CASES, SYSTEM COMMAND 1 TEST CASE, SYSTEM MODE TRANSITIONS —
TEST PROCEDURES - POST-001 IMAGE A/D CALIBRATION
SCR-001 - STANDBY DIANISTIC mode,
SF-009 ANALYSIS OF SYSTEM INTERFACE,
REPORTS STRUCTURAL ANALYSIS - REPORT

*S: Satisfactory - **CAR:** Corrective action request – **Ma:** Major corrective action – **mi:** Minor corrective action*
*N/A: Not applicable - **N/E:** Not evaluated - **P:** Product - **M:** Management*

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE					
ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E

7.3 Design and development (continued)

7.3.7 Control of design and development changes						
34 Are design and development changes identified and records maintained?			S			
35 Are the changes reviewed, verified and validated, as appropriate, and approved before implementation? (1)	P		S			OBS #5
36 Does the review of design and development changes include evaluation of the effect of the changes on constituent parts and product already delivered?	P		S			
37 Does the organization's change control process provide for customer and/or regulatory authority approval of changes, when required by contract or regulatory requirement?			S			
38 Are records of the results of the review of changes and any necessary actions maintained (see 4.2.4)?			S			

Guidance Notes

(1) Give an example.

Jodi CruBaugh
IWFO MAG DOC

Objective evidence assessed / Observations / Comments / N/A explanation

1) RID (Review Item Discrepancy)
RID #69 - USMS Thrust Vector Alignment
Engineering Change Request.

SW CDR Rid #001 - Maintance mode added
SW CDR Rid #016 - Produce Timing Diagrams,
This one was withdrawn —
SW CDR Rid #005 Target Algorithms —

Critical Design Review
CDR Procedure - GES-AUGS Plan - 0014

*S: Satisfactory - **CAR:** Corrective action request – **Ma:** Major corrective action – **mi:** Minor corrective action*
*N/A: Not applicable - **N/E:** Not evaluated - **P:** Product - **M:** Management*

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.4 Purchasing					
7.4.1 Purchasing process					
39 Does the organization ensure that purchased product conforms to specified purchase requirements?	P	S			
40 Is the type and extent of control applied to the supplier and the purchased product dependent upon the effect of the purchased product on subsequent product realization or the final product?		S			
41 Is the organization responsible for the quality of all products purchased from suppliers, including customer-designated sources?		S			
42 Does the organization evaluate and select suppliers based on their ability to supply product in accordance with the organization's requirements?		S			
43 Are criteria for selection, evaluation and re-evaluation established?		S			
44 Are records of the results of evaluations and any necessary actions arising from the evaluation maintained (see 4.2.4)?		S			
45 Does the organization:	M				
a) maintain a register of approved suppliers that includes the scope of the approval? (1)		S			
b) periodically review supplier performance and use the records of these reviews as a basis for establishing the level of controls to be implemented? (2)		S			
c) define the necessary actions to take when dealing with suppliers that do not meet requirements?		S			
d) ensure where required that both the organization and all suppliers use customer-approved special process sources?		S			
e) ensure that the function having responsibility for approving supplier quality systems has the authority to disapprove the use of sources?		S			

Guidance Notes
(1) Review current register of approved suppliers.
(2) Review supplier's performance / measurement system (e.g., supplier rating).

VANESSA Lindsey - Purchase
TYLER COCHRAN - Purchase
STEVE MORRIS - Purchase

Objective evidence assessed / Observations / Comments / N/A explanation

STEVE MORRIS - PURCHASE FOR LUNAR PROGRAM

METRO -
EPS (ELECTRONIC POSTING SYSTEM) RFQ
PS 20 SIMPLIFIED ACQUISITION -

1) APPLIED PHYS LABS - CONTRACTS ISSUED INCLUDES DETAILS OF APPROVAL, RFQ DEFINE CRITERIA FOR APPROVAL
Solic # 8-NLEP2-1, WHEN SOLE SOURCE WINDOW OF CHALLENGE AVAIL TO ALL.
REVIEW : QUALITY RATING, TIMELINESS, PRICE COST + OTHER, CONDUCTED ON 1001C - CONTRACT LEVEL

2) COST IS MONITORED STATUS REPORT. VARIES PENDING CONTRACT TYPE
PERFORMANCE MILE STONES DEFINED - & ACCEPTANCE
STEVE HANDLES PROCUREMENT / COMPANY, CONTRACTS.
PAST AWARD DATABASE

S: Satisfactory - CAR: Corrective action request – Ma: Major corrective action – mi: Minor corrective action
N /A: Not applicable - N/E: Not evaluated - P: Product - M: Management

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.4 Purchasing (continued)					
7.4.2 Purchasing information					
46 Does purchasing information describe the product to be purchased, including where appropriate (1):	P				
a) requirements for approval of product, procedures, processes and equipment?		S			
b) requirements for qualification of personnel?		S			
c) quality management system requirements?		S			
d) the name or other positive identification, and applicable issues of specifications, drawings, process requirements, inspection instructions and other relevant technical data?		S			
e) requirements for design, test, examination, inspection and related instructions for acceptance by the organization?		S			
f) requirements for test specimens (e.g., production method, number, storage conditions) for design approval, inspection, investigation or auditing?		S			
g) requirements relative to:		S			
- supplier notification to organization of nonconforming product? and					
- arrangements for organization approval of supplier nonconforming material?					
h) requirements for the supplier to notify the organization of changes in product and/or process definition and, where required, obtain organization approval?		S			
i) right of access by the organization, their customer, and authorities to all facilities involved in the order and to all applicable records?		S			
j) requirements for the supplier to flow down to sub-tier suppliers the applicable requirements in the purchasing documents, including key characteristics where required?		S			
47 Does the organization ensure the adequacy of specified purchase requirements prior to their communication to the supplier?		S			

Guidance Notes

(1) Examine purchase orders that apply to several types of procurement.

Objective evidence assessed / Observations / Comments / N/A explanation

1) Armed Contract NNM06AB45P. IT & Facilities - CMM Operation - Vanessa Lindsey PS31
Contract # NNM07AB04P, Lease Facility/Maint Aircraft
Contract ~~NNH06CC91B~~ NNM06AA52D Aircraft Pilot Training -
Seedwork - Supplier for Training Pre Approved by NASA.
Contract NAS5-02144 IT & Computer Hardware -
This Supplier
Scientific & Workstation Procurement Maintained by NASA/Contractor
List of Suppliers from Data Base Includes Secure
CMM Contract Management module - Used for Contract Team
Source Suppliers, GSA, SEWP, RFQ
NASA Form 1698 APR 99 Checklist for Award -

S: Satisfactory - CAR: Corrective action request – Ma: Major corrective action – mi: Minor corrective action
N/A: Not applicable - N/E: Not evaluated - P: Product - M: Management

GSA, CCR. Thomas Registrar,
633 Reporting

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.4 Purchasing (continued)					
7.4.3 Verification of purchased product					
48 Does the organization establish and implement the inspection or other activities necessary for ensuring that purchased product meets specified purchase requirements, they may include ***obtaining objective evidence of the quality of the product from suppliers (e.g., accompanying documentation, certificate of conformity, test reports, statistical records, process control), inspection and audit at supplier's premises, review of the required documentation, inspection of products upon receipt, and, delegation of verification to the supplier, or supplier certification?***	P	S			
49 Is purchased product held until it has been verified as conforming to specified requirements unless it is released under positive recall procedure?		S			
50 Where the organization utilizes test reports to verify purchased product, is the data in those reports acceptable per applicable specifications? (1)		S			
51 Does the organization periodically validate test reports for raw material? (2)		S			
52 Where the organization delegates verification activities to the supplier, are the requirements for delegation defined and a register of delegations maintained? (3)		–		N/A	
53 Where the organization or its customer intends to perform verification at the supplier's premises, does the organization state the intended verification arrangements and method of product release in the purchasing information?		S			
54 Where specified in the contract, is the customer or the customer's representative afforded the right to verify at the supplier's premises and the organization's premises that subcontracted product conforms to specified requirements?		S			
55 It is ensured that verification by the customer is not used by the organization as evidence of effective control of quality by the supplier (it does not absolve the organization of the responsibility to provide acceptable product, nor shall it preclude subsequent rejection by the customer)?		S			

Guidance Notes

(1) Give an example of test reports reviewed.
(2) Give an example of validated test reports reviewed.
(3) Review current register of delegated verification activities.

N/A – NO Delegation Actives & Source Inspection or REC INSP Performed.

Objective evidence assessed / Observations / Comments / N/A explanation

REC

INSP Rep.
IAR – # 05400 Various CAPS, QDC Nipples. 1/8/07
REC PO# NNM06AA74C –
Source INSP – Performed REC is Count only
MIS Identified PD 250 – Right Parts Wrong Discription (Size).
Product Held in Secure Area Until Correct P/N – 4-5 wks.

Shirley BLAIR – INS. Team Lead.
REC INSP.

1) Test Cleaning Pressure Caps – Parker S4M 01-240
Acceptance Test, Inner Ring Tensile & Elongation –
N/C INSP Estimate 2250 Orders Processed 2006
2) IAR # 05240 & 05330 Raw Test #'s Performed
By Optical Emission Spectrometers
3) AMS 5737 Bar Stock – All Raw Material.

S: Satisfactory - **CAR**: Corrective action request – **Ma:** Major corrective action – **mi:** Minor corrective action
N/A: Not applicable - **N/E**: Not evaluated - **P:** Product - **M:** Management

OFI IAR # 05240 Raw Test – Refer to Shipment or IAR #.

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.5 Production and service provision					
7.5.1 Control of production and service provision					
56 ***Does planning consider, as applicable:***					
- ***the establishment of process controls and development of control plans where key characteristics have been identified?*** yes	P	S			
- ***the identification of in-process verification points when adequate verification of conformance cannot be performed at a later stage of realization?*** yes					
- ***the design, manufacture, and use of tooling so that variable measurements can be taken, particularly for key characteristics?*** yes					
- ***special processes (see 7.5.2)?*** yes		S			
57 Does the organization plan and carry out production and service provision under controlled conditions (1).			1 mi #6		
Do these controlled conditions include, as applicable:					
a) the availability of information that describes the characteristics of the product? yes		S			
b) the availability of work instructions, as necessary? yes		S			
c) the use of suitable equipment? yes		S			
d) the availability and use of monitoring and measuring devices? yes		S			
e) the implementation of monitoring and measurement? yes		S			
f) the implementation of release, delivery and post-delivery activities? yes		S			
g) accountability for all product during manufacture (e.g., parts quantities, split orders, nonconforming product)? yes	P	S			
h) evidence that all manufacturing and inspection operations have been completed as planned, or as otherwise documented and authorized? yes	P	S			
i) provision for the prevention, detection, and removal of foreign objects? yes		S			
j) monitoring and control of utilities and supplies such as water, compressed air, electricity and chemical products to the extent they affect product quality? yes		S			
k) criteria for workmanship, which shall be stipulated in the clearest practical manner (e.g., written standards, representative samples or illustrations)? yes		S			

Guidance Notes
(1) List the part number(s) used for this review. WO-10-1008, 1009, 1012, 1013, 1019, 1021, 1022, 1023, 1024, 1025

Objective evidence assessed / Observations / Comments / N/A explanation

In Mechanical Materials Properties Testing reviewed process of work requests - WO# 2007-0135, 2006-0624, 2006-0524, 2006-0347, 2006-0348, 2006-0340, 2006-0166, 2006-0034 in EWRS system - sampled controls in testing lab; In EE Fabrication Lab; WO 10-001; Quote spares/001 for project ECLSS/SPARES; parts list - configuration; date & lot codes, NASA STD 2-2905

EFT Parts Layout Form/Crimp Data Sheet/Torque Records

S: Satisfactory - CAR: Corrective action request – Ma: Major corrective action – mi: Minor corrective action
N/A: Not applicable - N/E: Not evaluated - P: Product - M: Management

Process for Electronic Fabrication and Assembly EFT-01-002, Rev 11/14/06

Procedure 10-1021

delinquent

• minor N/C - EWRS in Mechanical Testing - work orders not closed & NO open status

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.5 Production and service provision (continued)					
7.5.1.1 Production documentation					
58 Are production operations carried out in accordance with approved data?		S			
59 Does the data contain as necessary: *a) drawings, parts lists, process flow charts including inspection operations, production documents (e.g., manufacturing plans, traveler, router, work order, process cards); and inspection documents (see 8.2.4.1)?* yes *b) a list of specific or non-specific tools and numerical control (NC) machine programs required and any specific instructions associated with their use?* yes	P	S			
7.5.1.2 Control of production process changes					
60 Are persons authorized to approve changes to production processes identified? (1) yes	M				
61 Has the organization identified and obtained acceptance of changes that require customer and/or regulatory authority approval in accordance with contract or regulatory requirements? yes		S			
62 Are changes affecting processes, production equipment, tools and programs documented? yes	P	S			
63 Are procedures available to control their implementation? yes		S			
64 Are the results of changes to production processes assessed to confirm that the desired effect has been achieved without adverse effects to product quality? yes	P	S			
7.5.1.3 Control of production equipment, tools and numerical control (N.C.) machine programs					
65 Are production equipment, tools and programs validated prior to use and maintained and inspected periodically according to documented procedures? yes	P	S			
66 Does validation prior to production use include verification of the first article produced to the design data/specification? yes	P	S			
67 Are storage requirements, including periodic preservation/condition checks, established for production equipment or tooling in storage? yes if needed		S			
7.5.1.4 Control of work transferred, on a temporary basis, outside the organization's facilities					
68 When planning to temporarily transfer work to a location outside the organization's facilities, does the organization define the process to control and validate the quality of the work?	M	S		✓	

Guidance Notes

(1) Clearly defined list of persons or authorization established in procedures. verified - defined

Objective evidence assessed / Observations / Comments / N/A explanation

work orders - 10-1180, 10-1008, 10-1025, 10-1009, 10-1024, 10-1021 - in Fabrication - Drawings verified parts for setwork instructions - listed in 4.2.3 section of these notes.

See work orders from previous page -

Equipment PM verified -

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N /A: Not applicable - N/E: Not evaluated - P: Product - M: Management

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.5 Production and service provision (continued)					
7.5.1.5 Control of service operations					
69 ***Where servicing is a specified requirement, do service operation processes provide for:***		See next page			
a) a method of collecting and analyzing in-service data?					
b) actions to be taken where problems are identified after delivery, including investigation, reporting activities, and actions on service information consistent with contractual and/or regulatory requirements? (1) (2)					
c) the control and updating of technical documentation?					
d) the approval, control, and use of repair schemes? (3)					
e) the controls required for off-site work (e.g., organization's work undertaken at the customer's facilities)?					
7.5.2 Validation of processes for production and service provision					
70 Does the organization validate any processes for production and service provision where the resulting output cannot be verified by subsequent monitoring or measurement, including any processes where deficiencies become apparent only after the product is in use or the service has been delivered?	P	S			
Note: These processes are frequently referred to as special processes.					
71 Does validation demonstrate the ability of these processes to achieve planned results?		S			
72 Has the organization established arrangements for these processes including, as applicable:	M				
a) defined criteria for review and approval of the processes?		S			
- qualification and approval of special processes prior to use?		S			
b) approval of equipment and qualification of personnel?		S			
c) use of specific methods and procedures?					
- control of the significant operations and parameters of special processes in accordance with documented process specifications and changes thereto? (4)		S			
d) requirements for records (see 4.2.4)?		S			
e) and revalidation?					

Guidance Notes

(1) Review reports issued following visits to the customer (technical support), comment on method of collection of in service data and examine some investigation reports.
(2) Review evidence of implementation of corrective and preventive actions.
(3) Review evidence of what has been assessed (e.g., maintenance manual, repair manual, information to customer).
(4) Give examples. work orders from fabrication shop

Objective evidence assessed / Observations / Comments / N/A explanation

In EEE Fabrication Shop/Lab
- Soldering
- WO - 10/1018
- Shearing -
ESD wrist straps ✓ verified ✓ annual checks

Soldering
NDE
coating

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.5 Production and service provision (continued)					
7.5.3 Identification and traceability					
73 Where appropriate, has the organization identified the product by suitable means throughout product realization? lfs		S			
74 ***Does the organization maintain the identification of the configuration of the product in order to identify any differences between the actual configuration and the agreed configuration?*** lfs	P	S			
75 Has the organization identified the product status with respect to monitoring and measurement requirements? lfs		S			
76 ***When acceptance authority media are used (e.g., stamps, electronic signatures, passwords), does the organization establish and document controls for the media?*** (1) lfs		S			
77 Where traceability is a requirement, does the organization control and record the unique identification of the product (see 4.2.4)? lfs		S			
78 ***According to the level of traceability required by contract, regulatory, or other established requirement, does the organization's system provide for:*** (2)	P				
a) ***identification to be maintained throughout the product life?*** lfs		S			
b) ***all the products manufactured from the same batch of raw material or from the same manufacturing batch to be traced, as well as the destination (delivery, scrap) of all products of the same batch?*** lfs		S			
c) ***in any assembly, the identity of its components and those of the next higher assembly to be traced?*** lfs		S			
d) ***in any given product, a sequential record of its production (manufacture, assembly, inspection) to be retrieved?*** lfs		S			

Note: In some industry sectors, configuration management is a means by which identification and traceability is maintained ***(see 4.3)***.

7.5.4 Customer property — Interviewed Property Manager					
79 Does the organization exercise care with customer property while it is under the organization's control or being used by the organization? (3) lfs		S			
80 Has the organization identified, verified, protected and safeguarded customer property provided for use or incorporation into the product? lfs		S			
81 Does the organization define methods to identify and record (see 4.2.4) customer products that are lost, damaged or otherwise made unusable and report such to the customer? lfs		S			

Note: Customer property can include intellectual property, ***including customer furnished data used for design, production and/or inspection.***

Guidance Notes

(1) Give examples of method(s) used. stamps for QA - MSFC Quality Status Stamp Accountability System
(2) Give examples of traceability level applied (up and down).
(3) Identify types of product supplied by the customer. parts materials, tools equipment

Objective evidence assessed / Observations / Comments / N/A explanation

Interviewed the Quality Information Systems Specialist and reviewed stamp controls and verified online system. Stamp database sampled, MSFC Quality Status Stamp Accountability System; Audits verified for stamp controls.

Parts Log and Form, config, date & lot codes
Comp Data Sheet — Traceability

Procedure MPR 4000.1, Rev F

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.5 Production and service provision (continued)					
7.5.5 Preservation of product Procedure - MPR 6410.1 Rev E					
82 Does the organization preserve the conformity of product during internal processing and delivery to the intended destination? Yes Procedure MWI 4500.1 Rev F		S			
83 Does the preservation include identification, handling, packaging, storage and protection? Yes		S			
84 Does preservation also apply to the constituent parts of a product? Yes		S			
85 Does preservation of product also include, where applicable in accordance with product specifications and/or regulations, provisions for:	**P**				
a) cleaning? Yes		S			
b) prevention, detection and removal of foreign objects? Yes		S			
c) special handling for sensitive products? Yes		S			
d) marking and labeling including safety warnings? Yes		S			
e) shelf life control and stock rotation? Yes		S			
f) special handling for hazardous materials? Yes		S			
86 Does the organization ensure that documents required by the contract/order to accompany the product are present at delivery and are protected against loss and deterioration? Sampled Transaction Documents and Parts Tags		S			

Objective evidence assessed / Observations / Comments / N/A explanation

- Interviewed the Transportation Office Team Leader - Logistics Group and reviewed receiving procedure and processes.
- Customer Feedback Charts sampled.
- Interviewed Supervisor & Property Management; warehouse
- Custodial Storage
- program stock - NASA asset
- Life items
- MWI 4520.1, Rev G
- Storage & Explosive - at Red Stone Arsenal
- Annual wall to wall inventory & warehouse
- Sampled Transaction Documents
- Calendar Year 2005 Physical Inventory Report and Results
- NPR 4200.1 for contract # H360491D
- Inventory Analysis

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
7.6 Control of monitoring and measuring devices					
87 Does the organization determine the monitoring and measurement to be undertaken and the monitoring and measuring devices needed to provide evidence of conformity of product to determined requirements (see 7.2.1) (1)? yes	P	S			
88 Does the organization maintain a register of these monitoring and measuring devices, and define the process employed for their calibration including details of equipment type, unique identification, location, frequency of checks, check method and acceptance criteria? yes	M	S			
Note: Monitoring and measuring devices include, but are not limited to: test hardware, test software, automated test equipment (ATE) and plotters used to produce inspection data. It also includes personally owned and customer supplied equipment used to provide evidence of product conformity.					
89 Does the organization establish processes to ensure that monitoring and measurement can be carried out and are carried out in a manner that is consistent with the monitoring and measurement requirements? yes		S			
90 Does the organization ensure that environmental conditions are suitable for the calibrations, inspections, measurements and tests being carried out? yes		S			
91 Where necessary to ensure valid results, is measuring equipment:		S			
a) calibrated or verified at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; where no such standards exist, the basis used for calibration or verification shall be recorded? (2) yes		|	OBS #2		
b) adjusted or re-adjusted as necessary? yes		|			
c) identified to enable the calibration status to be determined? yes		|			
d) safeguarded from adjustments that would invalidate the measurement result? yes		|			
e) protected from damage and deterioration during handling, maintenance and storage? yes		|			
f) recalled to a defined method when requiring calibration? yes		S			
92 Does the organization assess and record the validity of the previous measuring results when the equipment is found not to conform to requirements? yes		S			
93 Does the organization take appropriate action on the equipment and any product affected? yes	P	S			
94 Are records of the results of calibration and verification maintained (see 4.2.4)? yes		S			
95 When used in the monitoring and measurement of specified requirements, is the ability of computer software to satisfy the intended application confirmed? yes	P	S			
96 Is this undertaken prior to initial use and reconfirmed as necessary? yes		S			
Note: See ISO 10012 for guidance. Procedure - MPR 8730.5 Rev J					

Guidance Notes

(1) Review that the organization has a process for ensuring the capability of measurement system (e.g., Interval Analysis, Resolution Analysis, Gage Repeatable & Reproducibility, etc.). Interval and Repeatability

(2) Ensure the links to the recognized international / national standard. ANSI-Z540-1

Objective evidence assessed / Observations / Comments / N/A explanation

Interviewed the NASA COTR Calibration Monitor. and the Quality Manager of Cal. Lab.
Sampled MCal Mgmt System from MET CAL. Verified Master Recall list - 60 Day recall work. Reviewed Delinquent list.
Bar coded - Scanned into database - generates Work Orders. → automatic recall system

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MCMS Work orders
13502 3273 13102 3783
13502 1630

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
8 MEASUREMENT, ANALYSIS AND IMPROVEMENT					
8.1 General					
01 Does the organization plan and implement the monitoring, measurement, analysis and improvement processes needed (1):	M				
a) to demonstrate conformity of the product?		✓			
b) to ensure conformity of the quality management system?		✓			
c) to continually improve the effectiveness of the quality management system?		✓			
02 Does this include determination of applicable methods, including statistical techniques, and the extent of their use?		✓			

Note: ***According to the nature of the product and depending on the specified requirements, statistical techniques may be used to support:***

- ***design verification (e.g., reliability, maintainability, safety) ;***
- ***process control:***
  - ***selection and inspection of key characteristics***
  - ***process capability measurements;***
  - ***statistical process control;***
  - ***design of experiment;***
- ***inspection – matching sampling rate to the criticality of the product and to the process capability ;***
- ***failure mode and effect analysis.***

Guidance Notes

(1) Give examples of data.

Objective evidence assessed / Observations / Comments / N/A explanation

Reviewed results of planning implemented as monitoring + measurement activity demonstrating conformity to reqt's (Test - See 8.2.4)
conformity to QMS - (See 5.4, 8.2.2)
and improvement to effectiveness of QMS - (See note in 8.5.1)

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
8.2 Monitoring and measurement (continued)					
8.2.1 Customer satisfaction					
03 As one of the measurements of the performance of the quality management system, does the organization monitor information relating to customer perception as to whether the organization has met customer requirements (1)?		✓			
04 Are the methods for obtaining and using this information determined?		✓			
8.2.2 Internal audit MPR - 1280.6					
05 Does the organization conduct internal audits at planned intervals to determine whether the quality management system (2): a) conforms to the planned arrangements (see 7.1), to the requirements of this International Standard and to the quality management system requirements established by the organization? b) is effectively implemented and maintained?	M	✓	NC #1		
06 Is an audit program planned, taking into consideration the status and importance of the processes and areas to be audited, as well as the results of previous audits?		✓			
07 Is the audit criteria, scope, frequency and methods defined?		✓			
08 Does the selection of auditors and conduct of audits ensure objectivity and impartiality of the audit process? (3)		✓			
09 Does the organization ensure internal auditors do not audit their own work?		✓			
10 Are the responsibilities and requirements for planning and conducting audits, and for reporting results and maintaining records (see 4.2.4) defined in a documented procedure?		✓			
11 Does the management responsible for the areas being audited ensure that actions are taken without undue delay to eliminate detected nonconformities and their causes?	M	✓			
12 Do follow-up activities include the verification of the actions taken and the reporting of verification results (see 8.5.2)? (4)		✓			
13 Are detailed tools and techniques developed such as check sheets, process flowcharts, or any similar method to support audit of the quality management system requirements?		✓			
14 Are the selected internal audit tools acceptable in measuring the effectiveness of the internal audit and overall organization performance?		✓			
15 Do internal audits also meet contract and/or regulatory requirements?		✓			

Note: See ISO 19011 for guidance.

Guidance Notes

(1) Give examples of how customer's satisfaction is measured, committed, and acted upon.
(2) Review of audit program (status of the previous year and progress of the current year).
(3) Check the list of approved auditors.
(4) Review audit follow-up activities (questionnaire, synthesis, circulation, request for corrective actions, corrective actions follow-up).

Objective evidence assessed / Observations / Comments / N/A explanation

NPR 1280.8 - Customer Sat. - Waiver Letter
Observed Metrics / data related to OL evaluation of Cust Sat.
Changing process for evaluation, Cust. Sat

MP10200601 - Audit Report - cover, Sign. page, Lead Auditor Appr., Summary
NCR 912 and 913

ET09200601 - Audit Report - contents - NCR - 900 - 901, 902, 909

Exec. Seminar ⇐ use of checklists

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
8.2 Monitoring and measurement (continued)					
8.2.3 Monitoring and measurement of processes					
16 Does the organization apply suitable methods for monitoring and, where applicable, measurement of the quality management system processes?		✓			
17 Do these methods demonstrate the ability of the processes to achieve planned results?		✓			
18 When planned results are not achieved, is correction and corrective action taken, as appropriate, to ensure conformity of the product?		✓			
19 In the event of process nonconformity, does the organization: (1) See pg 4 for details ***a) take appropriate action to correct the nonconforming process?*** ***b) evaluate whether the process nonconformity has resulted in product nonconformity?*** ***c) identify and control the nonconforming product in accordance with clause 8.3?***	P	✓			
8.2.4 Monitoring and measurement of product					
20 Does the organization monitor and measure the characteristics of the product to verify that product requirements have been met?	P	✓			
21 Is this carried out at appropriate stages of the product realization process in accordance with the planned arrangements (see 7.1)? Test plans carried out		✓			
22 When key characteristics have been identified, are they monitored and controlled?	P	✓			
23 When the organization uses sampling inspection as a means of product acceptance, is the plan statistically valid and appropriate for use? NO Sampling used		✓			
24 Does the plan preclude the acceptance of lots whose samples have known nonconformities?		✓			
25 When required, is the plan submitted for customer approval?		✓			
26 Is product held until it has been inspected or otherwise verified as conforming to specified requirements, except when product is released under positive-recall procedures pending completion of all required measurement and monitoring activities?	P	✓	-		
27 Is evidence of conformity with the acceptance criteria maintained?		✓			
28 Do records indicate the person(s) authorizing release of product (see 4.2.4)? Verified on Stamp		✓	(MCPS)		
29 Is product release and service delivery held until all the planned arrangements (see 7.1) have been satisfactorily completed, unless otherwise approved by a relevant authority and, where applicable, by the customer?		✓			

Guidance Notes

(1) Give examples of nonconformities reviewed (process nonconformity, any resulting product nonconformity). Non Noted

Objective evidence assessed / Observations / Comments / N/A explanation

8.2.4
TCP - 103-TCP-006 Rev F Safety Critical J2X IGNITER Test
Records of Tests - Qa by - 11 Ed. Johnson
103-FOP-0109-1 3/28/06 - check of equipment calibrated equip
Test Request Sheet.

Test Plan 809-8757 Vacuum Test observed completed records of Test
Test Approved, Test Acceptance, completion of required steps

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8.2.3 - Monitoring of Launch activities - Space Shuttle Launch Operations Support

Interviewed HOSC Mgr. as per MP-OWI-05 Rev F

period of 16 hrs prior to Launch T-16 through T+4

Reviewed Controlled access/personnel, communication, identification of anomalies & potential anomalies and actions taken to mitigate or correct problem. Reviewed & discussed log used to record activities.

8.2.3 Reviewed Activities of CFO related to Financial Mgmt Data Report - Scorecard

Interviewed CFO - reviewed and discussed Deliverables/Products, Accounting Metrics, QA Control reviews, processing purchase Request.

Observed Metrics Scorecard dated Dec 2006 related concerns and actions taken to Mitigate problems/issues.

Issues included Travel card delinquencies, Timeliness of reporting by ALC and related actions to correct.

QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
8.2 Monitoring and measurement (continued)					
8.2.4.1 Inspection documentation					
30 Are measurement requirements for product or service acceptance documented?		✓			
31 Does this documentation, which may be part of the production documentation, include: *a) criteria for acceptance and/or rejection?* *b) where in the sequence measurement and testing operations are performed?* *c) a record of the measurement results?* *d) type of measurement instruments required and any specific instructions associated with their use?*	P	✓ ✓ ✓ ✓			
32 Do test records show actual test results data when required by the specification or acceptance test plan?		✓			
33 When required to demonstrate product qualification does the organization ensure that records provide evidence that the product meets the defined requirements?		✓			
8.2.4.2 First article inspection					
34 Does the organization's system provide a process for the inspection, verification, and documentation of a representative item from the first production run of a new part, or following any subsequent change that invalidates the previous first article inspection result? (1) No Samples found	P				✓

Note: See (AS) (EN) (SJAC) 9102 for guidance.

Guidance Notes

(1) Give examples of first article (new product and/or changed product). No new production articles produced

Objective evidence assessed / Observations / Comments / N/A explanation

Shuttle Test Integration Test - Test Plan 809-8757
LH2 Tank Ice Frost Ramp Cryo Thermal
Environmental Test Jim Cisco. Test Vacuum Test.
Personnel Qualification Testing - Approvals - Customer approval included
XT 1857 Configuration Panel ID IFR-ALN 1857-20
Cryo Cycle 2 + Thermal-Vac Test
Test profiles - Ascent Pressure Profile defined acceptance criteria
- Backside Temp. Profile
Test & Checkout Procedure per 304-TCP-015 2/22/07 Safety Critical

Ed Johnson, Jim Sisco - not in System

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
8.3 Control of nonconforming product MPR 8730.3 MWI 8730.1					
35 Does the organization ensure that product which does not conform to requirements is identified and controlled to prevent its unintended use or delivery?	P	✓			
36 Are the controls and related responsibilities and authorities for dealing with nonconforming product defined in a documented procedure?		✓			

Note: ***The term "nonconforming product" includes nonconforming product returned from a customer.***

37 Does the organization's documented procedure define the responsibility for review and authority for the disposition of nonconforming product and the process for approving personnel making these decisions? MPR 8730.3 – Letter of Delegation		✓			
38 Does the organization deal with nonconforming product in one or more of the following ways by: a) taking action to eliminate the detected nonconformity? Low Volume of activity b) authorizing its use, release or acceptance under concession by a relevant authority and, where applicable, by the customer? c) taking action to preclude its original intended use or application?	P	✓			
39 Does the organization prevent dispositions of use-as-is or repair, unless specifically authorized by the customer, if ***- the product is produced to customer design? or*** No Sample ***- the nonconformity results in a departure from the contract requirements?*** ***Unless otherwise restricted in the contract, is organization-designed product, which is controlled via a customer specification, dispositioned by the organization as use-as-is or repair, provided the nonconformity does not result in a departure from customer-specified requirements?***		✓			
40 Is product dispositioned for scrap conspicuously and permanently marked, or positively controlled, until physically rendered unusable? No Scrap Material found	P	✓			
41 Are records of the nature of nonconformities and any subsequent actions taken, including concessions obtained, maintained (see 4.2.4)?		✓			
42 When nonconforming product is corrected, is it subject to re-verification to demonstrate conformity to the requirements?		✓			
43 When nonconforming product is detected after delivery or use has started, does the organization take action appropriate to the effects, or potential effects, of the nonconformity?	P	✓			
44 In addition to any contract or regulatory authority reporting requirements, does the organization's system provide for timely reporting of delivered nonconforming product that may affect reliability or safety?	P	✓			
45 Does notification include a clear description of the nonconformity, which includes as necessary, parts affected, customer and/or organization part numbers, quantity, and date(s) delivered?		✓			

Note: ***Parties requiring notification of nonconforming product may include suppliers, internal organizations, customers, distributors, and regulatory authorities.***

Objective evidence assessed / Observations / Comments / N/A explanation

Center level MRB / Project Level MRB - appointed by Letter - (NSG Project MRB) 5/12/06
appointment letter 3/10/06

DR# 7649 Disp Use-As-Is

In Fabrication Shop - verified controls - DR # 7646 - Use As Is – verified for lower + MRB approvals

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
8.4 Analysis of data					
46 Does the organization determine, collect and analyze appropriate data to demonstrate the suitability and effectiveness of the quality management system and to evaluate where continual improvement of the effectiveness of the quality management system can be made?	M	/			
47 Does this include data generated as a result of monitoring and measurement and from other relevant sources?		/			
48 Does the analysis of data provide information relating to: (1) a) customer satisfaction (see 8.2.1)? b) conformity to product requirements (see 7.2.1)? c) characteristics and trends of processes and products including opportunities for preventive action? d) suppliers?		/ / / /			

Guidance Notes

(1) Give examples and check how the organization measures the effectiveness. See below

Objective evidence assessed / Observations / Comments / N/A explanation

Observed analysis of data at Mgmt Rev. (IMSB, CMC and SPC)

Analysis included information related to customer satisfaction, product requirements conformity, process conformity, Trends and Supplier performance.

Contractor Performance Measures & Data Analyzed

- Timeliness
- Performance/Quality Data
- Performance Evaluations

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
8.5 Improvement					
8.5.1 Continual improvement					
49 Does the organization continually improve the effectiveness of the quality management system through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management review? NASA - Lean & Sigma initiatives		✓			
8.5.2 Corrective action					
50 Does the organization take action to eliminate the cause of nonconformities in order to prevent recurrence? (1)	P				✓
51 Are corrective actions appropriate to the effects of the nonconformities encountered?					✓
52 Is a documented procedure established to define requirements for: See next page audit GGH completed this section					
a) reviewing nonconformities (including customer complaints)?					/
b) determining the causes of nonconformities?					/
c) evaluating the need for action to ensure that nonconformities do not recur?					/
d) determining and implementing action needed?					/
e) recording of the results of the action taken (see 4.2.4)?					/
f) reviewing corrective action taken?					/
g) flow down of the corrective action requirement to a supplier, when it is determined that the supplier is responsible for the root cause?					/
h) specific actions where timely and/or effective corrective actions are not achieved?					/
8.5.3 Preventive action					
53 Does the organization determine action to eliminate the causes of potential nonconformities in order to prevent their occurrence? (2)	M	S			
54 Are preventive actions appropriate to the effects of the potential problems? Risk Mgmt		S			
55 Is a documented procedure established to define requirements for: identify,					
a) determining potential nonconformities and their causes?		S			
b) evaluating the need for action to prevent occurrence of nonconformities? Analyze Plan		S			
c) determining and implementing action needed?		S			
d) recording of the results of the action taken (see 4.2.4)? Track Control		S			
e) reviewing preventive action taken?		S			

Guidance Notes

(1) Select a nonconforming part and use 52 a) through h) to check for effectiveness.
(2) Give examples of preventive action projects and check for effectiveness.

Objective evidence assessed / Observations / Comments / N/A explanation

8.5.3 RMO for LPR - (Risk Mgmt Officer) per MPR 8000.4
use of Continuous Risk Mgmt Worksheet - inputs for Risks identified - LPRP - Top Risks
Control Plan - to mitigate risk Risk # 2620 - High risk - #2433

8.5.1 Lean & Sigma - HSPD12 Event - Charter development, objectives, Kaizen event measurable improvements

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

ASSESSMENT QUESTIONS	KEY Requirements	S	CAR Number Ma or mi	N/A	N/E
8.5 Improvement					
8.5.1 Continual improvement					
49 Does the organization continually improve the effectiveness of the quality management system through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management review? yes		S			
8.5.2 Corrective action					
50 Does the organization take action to eliminate the cause of nonconformities in order to prevent recurrence? (1) yes	P	S			
51 Are corrective actions appropriate to the effects of the nonconformities encountered? yes		S			
52 Is a documented procedure established to define requirements for: procedure					
a) reviewing nonconformities (including customer complaints)? yes # MPR 12804, Rev E		S			
b) determining the causes of nonconformities? yes		S			
c) evaluating the need for action to ensure that nonconformities do not recur? yes		S			
d) determining and implementing action needed? yes		S			
e) recording of the results of the action taken (see 4.2.4)? yes		S			
f) reviewing corrective action taken? yes		S			
g) flow down of the corrective action requirement to a supplier, when it is determined that the supplier is responsible for the root cause? yes		S			
h) specific actions where timely and/or effective corrective actions are not achieved? yes		S			
8.5.3 Preventive action Close Call System					
53 Does the organization determine action to eliminate the causes of potential nonconformities in order to prevent their occurrence? (2) yes Client Response	M	S			
54 Are preventive actions appropriate to the effects of the potential problems? yes		S			
55 Is a documented procedure established to define requirements for:					
a) determining potential nonconformities and their causes? yes		S			
b) evaluating the need for action to prevent occurrence of nonconformities? yes		S			
c) determining and implementing action needed? yes		S			
d) recording of the results of the action taken (see 4.2.4)? yes		S			
e) reviewing preventive action taken? yes		S			

Guidance Notes

(1) Select a nonconforming part and use 52 a) through h) to check for effectiveness. Part # 2815S1-9002 Kaiser Item for - RCAR # 247
(2) Give examples of preventive action projects and check for effectiveness. RCAR 246 & RCAR 245, 241

Objective evidence assessed / Observations / Comments / N/A explanation

Failure & causes codes for the dep/n 10400-0328-804
Failure Reports, Monthly Review Engineering Report ChoER-0179
PRACA # 18200 Trending Report. doc # - failure
18209 Monthly CAS Report. investigation
18052 Customer Feedback # 403
18282 RCARs - 245, 246 247, 241
QSAN 78

S: Satisfactory - **CAR**: Corrective action request – **Ma**: Major corrective action – **mi**: Minor corrective action
N/A: Not applicable - **N/E**: Not evaluated - **P**: Product - **M**: Management

Interviewed - Supervision Passed on Assessment QE / Corrective Action QE
PAR 11120
DR 7641
Monthly CAS Report & Metrics Reviewed Trend Reports & Charts
Risk Management & Alerts, Close Calls & preventive

APPENDIX B

* * *

QUALITY MANAGEMENT SYSTEM AUDIT SCORING

Scoring Findings

The findings of each section and sub-section of the completed Quality System Questionnaire are reviewed and the Assessment Scoring sheet (page 10) completed as follows (using Section 4.1 as the example):

Multiple findings:

- If multiple findings with Major CAR, or multiple findings with Minor CAR on a Key requirement, then score in column A (result = 0).
- If multiple findings with Minor (mi) CAR on non-Key requirement, then score in column C (result = 25).

Single findings:

- If single finding with Major CAR, or single Minor CAR on a Key requirement, then score in column B (result = 10).
- If single finding with Minor CAR on non-Key requirement, then score in column D (result = 40).

No findings:

- If no CAR in a section, then score in "NO CAR" column (result = 50).

Note: When a finding occurred on several questions affecting the same section of the scoring table (e.g., 4.2 & 4.3 or 5.1-5.2-5.3), then score as "multiple" findings.

Scoring the Audit

Full Audit (all applicable clauses assessed):

1. The auditor calculates the total points possible. This is done by taking 1000 points and subtracting all points excluded as a result of N/As. (See instructions below about N/As.) This sum is then entered in the "Total Points Possible" block of the Assessment Scoring sheet.

2. The auditor then adds up all the points given for each section. This sum is then entered in the "Total Points Achieved" block of the Assessment Scoring sheet. (See instructions below as to how surveillance audits are scored.)

3. The auditor then divides the total points achieved by the total points possible. The resulting number is then multiplied by 100 to obtain the percentage score for the audit. This percentage is then entered in the "Score" block of the Assessment Scoring sheet.

Scoring the Audit (continued)

Examples:

a. This is a complete initial audit; all clauses and questions have been audited except clause 7.3, Design and development, which was Not Applicable (N/A) as the supplier does not perform design and development activities. The total number of points possible is 880 (1000 minus 120 for clause 7.3). The total number of points achieved was 750. The score is 85%.

Total Points Possible	880
Total Points Achieved	750
Score % (750/880) x 100	85%

b. This is a complete initial audit; all clauses and questions have been audited except clause 7.3, Design and development, and clause 7.5.2, Validation of processes for production and service provision, which were Not Applicable (N/A) as the supplier does not perform design and development activities and performs no special processes. The total number of points possible is 840 (1000 minus 120 for clause 7.3, and minus 40 for clause 7.5.2). The total number of points achieved was 700. The score is 83%.

Total Points Possible	840
Total Points Achieved	700
Score % (700/840) x 100	83%

Surveillance Audit (NOT all applicable clauses assessed):

In surveillance audits, not all clauses are assessed as the audit plan provides for only certain processes of the system (as described in International Accreditation Forum [IAF] guidance) to be audited. In addition to the assessment of the selected clauses, auditors should verify corrective action for all findings (nonconformances) from the previous audit.

1. The auditor calculates the total points possible. This is done by taking 1000 points and subtracting all points excluded as a result of N/As. (See instructions below about N/As.) This sum is then entered in the "Total Points Possible" block of the Assessment Scoring sheet.

2. The auditor assesses the planned clauses/processes and records the score for those clauses.

3. The auditor then scores all the other clauses as well. This is done by:

   a. Reviewing the corrective action for nonconformaces identified in the previous audt. If the nonconformance has been corrected, with good root-cause corrective action, and the auditor has verified the effectiveness of the corrective action, then that clause may be rescored with full points being given on this audit.

      Note: NEVER rescore previous audits. The supplier receives credit for correcting the findings of previous audits by the score on the current audit.

Scoring the Audit (continued)

b. Bringing forward the score on all other sections of the audit. These are the clauses which were evaluated in a previous audit and were scored. These clauses have not been re-audited, but there were no findings in the previous audit and there is no data to suggest that they are nonconforming now, therefore the points that were awarded previously are brought forward and used for this audit.

4. The auditor then adds up all the points given for each section. This sum is then entered in the "Total Points Achieved" block of the Assessment Scoring sheet.

5. The auditor then divides the total points achieved by the total points possible. The resulting number is then multiplied by 100 to obtain the percentage score for the audit. This percentage is then entered in the "Score" block of the Assessment Scoring sheet.

Example: The total points possible is 840 due to clauses 7.3 and 7.5.2 being Not Applicable (N/A). The surveillance audit was for clauses 5, 6, and 8 and these clauses scored a total of 400 points. The points achieved during the previous audit of clauses 4 and 7 are brought forward and totaled 300 points. The auditor verified effective corrective action on two findings on the previous audit which raised the score on clauses 4 and 7 from 300 to 330. The total points achieved for the current audit is 730. The score for the surveillance audit is 87%.

Total Points Possible	840
Total Points Achieved Current audit: 400 Previous audit: 300 + 30 for verified C/A = 330	730
Score % (730/840) x 100	87%

Additional guidance:

1. Not Applicable (N/A)

Individual clauses and sub-clauses of the 9100 standard may be identified as Not Applicable (N/A). Auditors should follow IAF guidance in defining what is N/A and what is applicable.

Example: A supplier could claim that clause 7.6, Control of monitoring and measuring devices, is N/A because the supplier sends all their gages to an outside company for calibration. However, this is not acceptable as the supplier must still have a recall system, etc., and must assure that the outside company has a system which meets the applicable requirements of clause 7.6. Auditors must use their best judgement to assure consistency and validity in identifying 9100 clauses that are N/A for the supplier's quality management system.

Additional guidance (continued):

2. Multiple site scoring

   Per IAF guidance, the auditing of multiple sites at a supplier that has one quality system is allowed. For the purposes of scoring a multiple site audit, the following will apply:

   a. There will be a single 9101 scoring sheet summarizing the scores for multiple site registrations, not individual sheets for each site. The concept of a multiple site audit is that the supplier has one quality management system; a nonconformity to a clause of the standard at one site represents a failure of the overall quality management system.

   b. The score for each line/clause MUST be the lowest score assessed from any of the sites; it MAY NOT be an average score of the sites. If three sites have perfect scores of 50 for a line item, and the fourth site has a score of 20, then the score on the 9101 scoring sheet MUST be 20. The audit report must specify the fourth site as the site having the finding.

   c. All multi-site questionnaires that will be used to complete the overall summary score for the organization must be retained by the CRB.

3. Multiple instances of the same finding

   When there are multiple instances of the same finding, the auditor will issue one finding against that question and score the question as a single finding. The easiest example is where numerous gages were found out of calibration; even though there were multiple instances, only one finding against calibration would be issued.

   Example: On question number 91 in Section 7 of the questionnaire (clause 7.6, Control of monitoring and measuring devices) the auditor found 15 gages in use on the manufacturing floor that were past their calibration dates. This could be considered a Major finding, but would constitute a single finding, even though there were a number of instances observed. Therefore, the supplier would receive 5 points for clause 7.6. (if there were no other findings in 7.6).

4. Use of Not Evaluated (N/Es)

   IAF guidance applies to an audit of the 9100 standard. N/Es should never be used in an initial or full re-certification audit as these are, by definition, audits of the supplier's full system. If a portion of the specification does not apply, an N/A should be applied. An audit plan must be established such that all questions are covered by the surveillance audits prior to the next full re-certification audit. The use of N/Es on checklists shall be governed by the organization's process.

Annex A

(informative)

Bibliography

AS/EN/JISQ 9100	Quality Management Systems – Aerospace - Requirements
AS/EN/SJAC 9102	Aerospace First Article Inspection Requirement
AS/EN/SJAC 9104	Requirements for Aerospace Quality Management System Certification/Registrations Programs
ISO 9000:2000	Quality management systems – Fundamentals and vocabulary
ISO 9001:2000	Quality management systems – Requirements
ISO 10007:1995	Quality management – Guidelines for configuration management
ISO 10012:2003	Measurement management systems – Requirements for measurement processes and measuring equipment
ISO 19011:2002	Guidelines for quality and/or environmental management systems auditing